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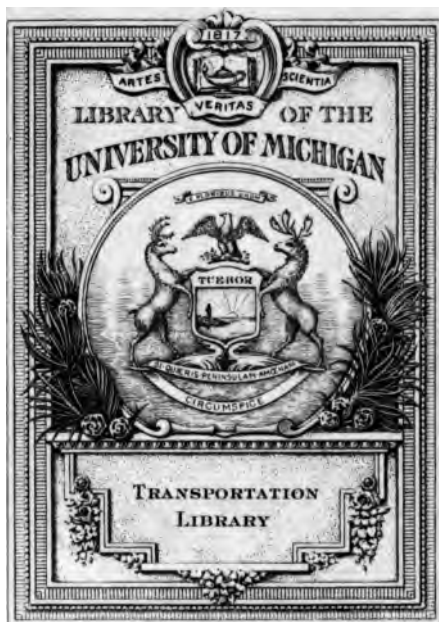
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A GENERAL PLAN
FOR
A MAIL
COMMUNICATION BY STEAM,
BETWEEN
GREAT BRITAIN
AND THE
EASTERN AND WESTERN PARTS OF THE WORLD;
ALSO, TO
CANTON AND SYDNEY, WESTWARD BY THE PACIFIC:
TO WHICH ARE ADDED,
GEOGRAPHICAL NOTICES
OF THE ISTHMUS OF PANAMA, NICARAGUA, &c.
With Charts.

By JAMES M'QUEEN, Esq.

LONDON:
B. FELLOWES, LUDGATE STREET.
1838.

Startling as the subject of connecting China and New South Wales with Great Britain, through the West Indies, may at first sight appear, both as regards time and expense, still few things are more practicable. The labour and expense of crossing the Isthmus of America, either by Panama or by Lake Nicaragua, by a land conveyance, is trifling. With eight steam-boats, ONLY FOUR ADDITIONAL to the number already in the West Indies, added to the present sailing-packet establishment, the whole Plan for the Western World, extending it westward to China and New South Wales, can, in the mean time, as the following pages will show you, be put into execution to the fullest extent, with a very great saving in time, and with very great regularity. A water communication moreover will, I feel convinced, and at no distant day, be carried through the American Isthmus—say by Lake Nicaragua—when the sailing packets for the Pacific may run direct between Jamaica and Sydney, New South Wales, and Canton-China.

In the estimate for the cost of steam-boats to be employed in the service proposed, I have been chiefly guided by, and adhere to, the statement made by that able and practical engineer Mr. Napier, of Glasgow, in his evidence to the Post-office Commissioners in 1836, that steam-boats of 240-horse power, and 620 tons burthen, could be furnished at from 24,000*l.* to 25,000*l.* At this rate the total yearly cost of mail communications by the aid of steam, to every quarter which has

been adverted to in the subsequent pages, will be as stated in the following brief summary. Reference No. 1, shows the expenditure, keeping the Red Sea route confined to India only, and extending the communication to China and Sydney by the Pacific, from Panama or Rialejo. No. 2, the expense, confining the communication by the Cape of Good Hope to India only, and extending the communication to Canton, &c. across the Pacific as before. No. 3, shows the expenditure for the Western World, the work performed by steam in the West Indies, and steam from Falmouth to Fayal, with sailing-packets for the remainder of the work; and the whole expense, by extending sailing-packets to China and Sydney westward across the Pacific, but limiting the communication by the Red Sea to India only. Lastly, No. 4, shows the expenditure of the communications made in a way similar to No. 3, limiting the conveyance by the Cape of Good Hope to India only: (see also Appendix No. 2, p. 128.)

	No. 1.	No. 2.	No. 3.	No. 4.
Western World .	£279,250	£279,250	£161,615	£161,615
East Indies, &c.	128,850	187,978	128,850	187,978
Pacific	63,000	63,000	63,000	63,000
	<u>£471,100</u>	<u>£530,228</u>	<u>£353,465</u>	<u>£412,593</u>

It is, however, to that portion connected with the Western World that the immediate and particular attention of yourself and the other members of Her Majesty's Government is particularly requested. The other parts, above alluded to, may hereafter not be

deemed unworthy of your consideration, and the consideration of the Public. Carried into effect in a decided manner, and as speedily as the nature and extent of the machinery required will admit, it would produce great and lasting advantages to the British empire, and confer great honour upon the British Government and the splendid Post-office establishment of this country.

Permit me to observe, that the speedy conveyance of mails outwards, to any place, is but a *minor* point gained, unless the returns are made regular and equally rapid, and so combined, that while every place possible can be embraced in the line, no place shall obtain any undue advantage over another. These points can never be lost sight of in planning or arranging any mail communication, but more especially a communication like that at present proposed.

No narrow or parsimonious views on the part of this great country ought to throw aside the plan particularly alluded to, or leave it to be taken up and split into divisions by parties, perhaps foreigners, who will then not only command the channels of British intelligence, but be enabled to demand what price they please for carrying a large and important portion of the commercial correspondence of this country. The Public, moreover, can only repose implicit confidence in a mail conveyance under the direction and the responsibility of Government. Further, it is scarcely neces-

sary to point out, or to advert to, the immense advantages which the Government of Great Britain would possess, in the event of hostilities, by having the command and the direction of such a mighty and extensive steam power and communication, which would enable them to forward, to any point within its vast range, despatches, troops, and warlike stores. From Falmouth, letters might be at Sydney, New South Wales, in seventy-five, and at Canton-China in seventy-eight days, by employing sailing packets only, to cross the Pacific from the Isthmus of America. Letters from Falmouth, by way of Barbadoes, Jamaica, and Chagre, could be at Lima in thirty-five days.

To give greater security to the mails, and comfort and accommodation to passengers, &c. a class of sailing-vessels rather larger than the generality of those at present employed in the West Indies, ought to be engaged; and for this purpose, a larger sum annually must be allowed to defray the expense. Some of those at present employed, such as the *Charib*, may do, but sloops are too small for the service.

It is only within these few months that a mail communication, and that very uncertain and irregular, has been commenced with the British Empire in Hindostan, containing 100,000,000 of people. With the rapidly rising colonies in British America, containing 1,700,000 enterprising inhabitants, there is still but one ill-regulated mail conveyance, by a sailing-packet, each month.

Such a state of things is neither creditable nor safe to a country like Great Britain. The population of these colonies must be left far behind their neighbours in the United States in all commercial intelligence, and the interests of the former must consequently suffer greatly.

The steam-boats to be employed in the service contemplated, although of the high power mentioned, need not be of the same tonnage as vessels of an equal power which are built for the sole purpose of carrying goods. Consequently, a considerable expense in building the former will be saved. Mails never can be carried either with regularity or certainty in vessels, the chief object and dependence of which is to carry merchandize. The time which such vessels would require to procure, take in, and discharge cargoes, would render punctuality and regularity, two things indispensably necessary in all mail communications, quite impracticable. Any attempt to resort to such a system, more especially in a quarter where steamers would have so many places to call at as these will have in the West Indies, would throw every thing into inextricable confusion. Steam-boats carrying mails and passengers should be the mail-coaches of the ocean, limited as mail-coaches on land are to cargoes, and as near as possible to the tonnage pointed out in the following pages. The steamers to be employed in the service contemplated should also be built broad in the beam, of a light draught of water, and in speed, accom-

modation, and security, must be such that no others of equal powers can surpass them.

The liberality of MR. JOHN ARROWSMITH, so well known for his geographical knowledge and geographical accuracy, has enabled me, without the labour of constructing it, to present to you and to the public the Chart of the World, between 70° N. lat. and 60° S. lat., on Mercator's projection, which accompanies the present sheets. On it I have laid down all the routes of both steamers and sailing-packets, to every quarter of the world that has been adverted to ; and further added a Chart of the West Indies, and of the Isthmus of America, drawn by myself, and corrected by the latest authorities.

The timid and the interested will throw every doubt upon the success of such an undertaking. What is going on in the world is the best answer to doubts and fears on this subject. What takes place in other quarters will take place in the quarters alluded to, namely, success where failure was anticipated.

In a vast undertaking like the plan proposed, the interests of the Government and the general interests of the public must be specially kept in view and particularly attended to. By attending closely to these interests, the Government will find that it best and most effectually consults the interests of individuals, places and communities. No partial or local interest

or opposition (such may in this, as in most other concerns, appear) ought to be listened to. Any such opposition can only proceed from prejudice, or ignorance, or self-interest; and a little experience will satisfy the public, and convince even such opposition, that the fact is so; and, moreover, that in the arrangements proposed, no interest in any quarter has been neglected.

I have the honour to be,
SIR,
Your most obedient humble servant,

JAMES M'QUEEN.

LONDON, 14th Feb. 1838.

A GENERAL PLAN
FOR
CONVEYANCE OF MAILS BY STEAM,
&c. &c.

INTRODUCTION.

THE conveyance of mails and despatches from one place to another is of the utmost possible importance to individuals, and to a country. The rapidity and regularity with which such communications can be made, gives to every nation an influence, a command, and advantages such as scarcely any thing else can give, and frequently extends even beyond the sphere of that influence and that command which the direct application of mere physical power can obtain to any government or people.

Much as Great Britain has already done, in this respect, to connect and to communicate with her very extensive, valuable, and important foreign dependencies, still much more remains to be done, to give her those advantages, and that influence, and that command which she might have, which she ought to have, which all her great interests require she should have; and which the power of steam, together with the late great improvements in machinery, can and ought, in a special manner, to secure unto her, her commerce, her power, and her people.

In no quarters of the world could the application of the power and the improvements alluded to prove so advantageous

to the commercial and the political interests of Great Britain as in the East Indies, in the West Indies, and in those places connected with these quarters; and also in all those countries and places which afford the safest and the speediest means of connecting the chain closely which tends to enable her to communicate more frequently, more rapidly, and more regularly with these places; and, at the same time, all these quarters, and her own possessions, with the parent State.

The object being a national one, it ought to be carried into effect by the nation, without reference to the mere question of pounds shillings and pence; that is, whether it is to become a directly remunerating concern or not. While the important subject ought to be taken up in this manner by the Government of Great Britain, it may be observed that the plan requisite, carried into effect in the most extensive manner, will certainly remunerate fully the Government or the individuals who may undertake the work, either on the general or on the more limited scale; but the higher, the more the scale is extended.

In fact, unless the plan is carried into effect on an extensive scale, it will not prove a concern so remunerating as it would otherwise be, because it is only by connecting different places in the line, or within the sphere of communication, that a greater number, or rather a sufficient number, of letters and passengers can be obtained; and unless the communications are sufficiently frequent and regular, both letters and travellers will continue to find private traders and ships in general the quickest mode of proceeding on and getting to the end of their journey, or the place of their destination.

The position of the United States, in the western world, and the very extensive trade which these States carry on with every part of that quarter of the world, and indeed with every quarter of the world, gives the merchants of these States, constituted as the packet arrangements and communications of Great Britain with foreign parts now are, an opportunity of receiving earlier intelligence regarding the state of many important foreign markets than British merchants in general enjoy, except such as are immediately connected with establishments in the United States, and by which means both obtain

decided advantages over the rest of the commercial community. This ought not to be the case in a great commercial country like Great Britain. It is a fact quite notorious, that from almost every quarter of the western world the earliest intelligence is almost uniformly received through the United States. The whole correspondence of the important British Provinces, the Canadas, comes through these States. It is also notorious, that, by means of our own commercial marine, intelligence is generally received from many foreign countries earlier than by Government Packets. Indeed, it is not uncommon among merchants to return, unopened, to the Post-office many letters in originals, they having previously received the duplicates by private merchant ships. Besides, it is well known that vast numbers of letters from Great Britain to Foreign States are sent through the United States, because these go earlier to their place of destination. In these various ways a great Post-office revenue is cut off, while the mercantile world are put to a great inconvenience and uncertainty. It is not befitting that the first commercial country in the world should remain dependent upon the private ships of another commercial and rival state for the transmission of commercial correspondence. If such a deficient system is persevered in, the result will most infallibly be, that that country which obtains, and which can obtain, the earliest commercial information, will, in time, become the greatest and most prosperous commercial country.

It is, in fact, quite impossible that the commercial interests of any country can ever compete with the commercial interests of another country, unless the one have equally rapid, frequent, and regular opportunities and means of correspondence and conveyance with the other. If the merchants of other countries have quicker and more frequent communications with any particular quarter of the world, than the merchants of the United Kingdom have, it is obvious that the former will obtain a decided advantage over the latter, in regulating and directing all commercial transactions.

The foreign trade of Great Britain, besides forming an immense moving power for giving activity to every branch of internal industry, trade, and commerce, becomes also, from the

correspondence to which it gives rise, and by which it can alone be carried on, an immense and direct source of Post-office revenue: but the direct postage derived from the correspondence required in the foreign trade, great as it is, is small when compared to the addition which the correspondence in the foreign trade directly and immediately gives to the internal postages of the kingdom. If it is examined narrowly, it will, it is not doubted, be found that almost every letter of the moiety of those which come from the British transmarine possessions, and from other foreign parts, whether by packets or by merchant ships, (of the latter, it may be said, a number equal to the whole which pay postage do, because the very great number of letters directed to consignees come free,) produces, perhaps, *ten letters*, on which the largest single internal postages are charged and paid. This arises from orders sent to different places to tradesmen, mechanical and manufacturing establishments for goods; orders for insurance; invoices sent; payments, in consequence, by bills or orders, and in bills transmitted for acceptances, &c. &c.

In all mail communications, such as those which are about to be considered, the point to be kept steadily in view, and one which is absolutely indispensable, is to connect and to bring the return mails and the outward together, in such a manner as that every intermediate place shall have the full benefit of both, without trenching upon the general interests, or occasioning any unnecessary detention or delay. This great and essential point is more particularly necessary to be attended to in the conveyance of mails by sea to distant parts, especially if conveyed by steam. In the quarters about to be noticed, the point alluded to will be shown to be more than in any other quarter necessary. Without this is effected, nothing beneficial is, in fact, effected; and to secure the object, a commanding power is obviously and indispensably necessary. For various reasons, which it is considered unnecessary here to state, steamers of 250-horse power each, will be found to be the best and most economical class of vessels to employ in the service contemplated.

The next and a still more important point to attend to,

and to keep in mind, is to have always in readiness, and at well-selected stations, a sufficient quantity of coals to supply each boat: without such are at command, no movement can take place; and unless the supply is ample, and always at hand, no regular communication can ever be carried on. Wood, indeed, may be procured in some stations in the West Indies, but not in all; while even where it can be obtained, it will be found to be dearer than coal. The quantity also necessary for a vessel of large power, and for a voyage of any considerable length, would far exceed the room that could be afforded, in a vessel of properly regulated tonnage. A supply of coals, moreover, could be had at all the places to be brought into notice by care, and foresight, at moderate rates, and at the rates taken in the subsequent calculations. Merchant vessels, bound to all quarters, so soon as they perceived that they were sure of a market, would take a proportion of coals as ballast; and others would be glad to take a portion even beyond that, to aid them in completing their cargoes, instead of remaining, as vessels both at Liverpool, Glasgow, &c. frequently do, some time, till they can obtain a sufficient quantity of goods to enable them to do so: while such vessels could at all times furnish in this way a sufficient supply of coals, at moderate rates, and still afford to them a fair profit; such assistance in loading, by enabling vessels to sail at short and regularly stated periods, would become of the most essential service to the commercial interests of this country.

The time hitherto occupied by steamers in taking in coals, in almost every place, has constituted of itself a considerable drawback on steam navigation: it may, to a great extent, be avoided. Let carriages, such as are used on the railroads for carrying coals at Newcastle, &c. be constructed with iron handles. These may be made to hold one and a half, or two tons of coals (either of these weights, it is supposed, might be hoisted into a vessel without difficulty), and be all filled and placed on a raft or punt ready at each depôt, thirty to sixty in number, according to its importance, awaiting the arrival of the packet steamer. The moment she comes into port, the punt will be alongside, and the whole will be hoisted in in a few hours, the place for

receiving them being always, and during the voyage, prepared for them. In this way 120 tons of coals may be taken in within a very short space of time; the buckets first emptied, refilled, and emptied again, to a considerable extent, in a period of no great additional time. At smaller depôts and ports, the steamer might hoist in thirty or forty tons of coals during her shorter time of stoppage; and thus steamers, without any material delay, would always have a sufficient and certain supply of fuel. The coals at all the depôts should be well covered and protected from the sun.

Further, on this head, most of the small coal (the best) which goes to waste at the depôts, may be saved by the following simple process:—Let it be mixed with a little clay, considerably diluted, then made into small balls, and afterwards dried in the sun (a rapid process within the tropics), and then taken on board with the others when wanted. It burns with great force. It is so used on estates in the West Indies for Stills. The saving is great, and the labour of making it up exceedingly light. A child may almost perform it.

It is necessary to observe, that steam-boats for the torrid zone must be fitted up and out in a manner considerably different, more especially in their hatches, from the best and most splendid boats in this country. For the convenience and health of both the passengers and crews, those for the torrid zone must, in every part, be more roomy and airy, yet so constructed as to be closed in the speediest and securest manner in the event of a hurricane; consequently they will require less expense in building, and fitting up of cabins, &c. than the crack boats in this country, in order to make them so.

In all the distances stated, there are, be it observed, included in the time allowed, three or four hours to land and take in mails and passengers at every place where the steamers may have to touch; and at the more important stations, at least six hours beyond the longer periods allowed for stoppages for coals and mails, &c. It will be necessary to give six or eight hours at Barbadoes before the departure of the steamer, that Government despatches may be forwarded. In fact, the steamer should always, and only leave that island at sun-rise

on the day following that whereon the packet arrived from England, because by doing so, it would reach St. Thomas at daybreak on the second morning (the navigation at that island is rather dangerous during the night), clear it, and reach St. John's, Porto Rico, with daylight, and in consequence Cape Nichola in daylight also, on the second day thereafter.

The old *Galatea* frigate might be carried up from Jamaica and moored at Cape Nichola Mole, on board of which those mails and specie may be deposited, that require to be disembarked from such steamers, &c., as cannot be detained till the packet arrives to receive them. This, however, will seldom be the case, nor to any great extent; as the homeward-bound packet, whether steamer or sailing-vessel, will almost always be at Cape Nichola before the steamer gets up from the leeward. She may also be used to hold coals for a supply for the steamer to a certain extent.

Let the fact be urged in the strongest manner, that a communication once a month, to any given place, will never pay, nor answer any great or good purpose. Mails, or rather letters and passengers, will not wait for such a length of time, especially when these could, as for example from the Havannah, almost be in England, by way of New York, in the interval that would elapse between the departure of one packet and another, when there was only one packet in the month; but give two each month, and neither could ever be so.

The arrangements, and the extent of the internal Post-office establishments of Great Britain, are upon the most splendid and efficient footing. There is nothing of a similar kind in any other country, either in management, or combination, or regularity, that can equal or even be compared to them. It is, however, much otherwise with all her transmarine mail communications. They are all particularly deficient in combination, limited in their operations, and inefficient as regards the machinery employed to carry the mails. This, in a more particular manner, is the case with the West Indies: the small sailing vessels there employed are generally very unfit for such a service, and the steamers sent out to work them, with the exception of the *Flamer*, being only of 100-horse power, and

besides badly constructed, are wholly unfit for the service in any way; and even the vessel named, which is 140-horse power, though much superior to any of the other three, the *Carron*, the *Echo*, and the *Albyn*, is still too small to perform her work in proper and reasonable time, or to stem the currents and trade winds, to say nothing of tempests, which, as regards the two former, constantly prevail in the seas in that quarter of the world.

It may also be remarked, that to extend or to add to the number of post communications, does not add proportionally to the machinery necessary for the conveyance of these: in other words, if the communications are doubled in number, the machinery used for conveyance is not necessarily doubled, nor the expense consequently doubled. Take, for example, the station between Barbadoes and Jamaica: with two mails each month, this could not be effected with fewer than three steam-boats; but the same number of steamers will, without inconvenience, extend the communication to Havannah, and take in, at the same time, several important places extra. A judicious and proper combination and regularity in all movements can, with the same machinery, and with but little additional expense, perform, in some instances double, and in many instances nearly double work.

The objects for making Fayal, in the Western Islands, a central point of communication, are as follow:—First, it is directly in the course for the West Indies; so nearly so for Rio de Janeiro in the outward voyage (in the homeward it is the best course), that if not actually the best course, as it is believed it really is, the deviation, as will afterwards more clearly appear, is not worth taking into account. It is also the proper course for New York, and even not much out of the way from the direct line to Halifax; while, considering the winds and currents, the Gulf stream, for example, which prevail in the Atlantic, steamers or sailing packets will make the voyage from Falmouth to Halifax by this route as speedily, on an average, as if they were to take the direct course. It is well known, that vessels bound to the northern ports of the United States, go much to the southward of the Western

Islands. Secondly, it will save two steam-boats on the North American line, and two more on the South American line, for that distance (not fewer than two would do for each line); which, with coals, yearly, would cost 41,600*l*. This, alone, ought to determine the point.

These steam-packets should be allowed to carry parcels, packages, and light and fine goods, which could afford to pay a considerable freight. This ought to be limited, however, not to exceed forty tons in each vessel on each of the great lines (except Falmouth to Fayal, which may be 120); and the small sailing vessels in proportion. These things, without retarding the speed materially, would produce a considerable return, but from which must come port charges, &c. If the steamers are allowed to become mere vessels of freight, or for carriage of goods, no regularity in their voyages could be expected. To avoid delay, these articles could be landed and taken to the Custom-house in every island and place, and delivered thence, under the Revenue laws, to each owner.

The greater extent to which combination can be carried on in the mail circle, and the wider that that circle can be extended, so much cheaper the labour of conveyance becomes, and the greater the returns therefrom. Further, not merely the greatest possible speed, but the greatest possible regularity, is the desiderata in the conveyance of mails in any country: the latter, in particular, is more essentially necessary than the former, and is, in fact, the life-spring of all commercial communication.

The work to be performed, in every quarter, must not only be well done, but done within a limited time, in order to render it beneficial and effective. Powerful boats, that can overcome the distance and the natural obstacles that present themselves, can alone do this. Small-power boats can never accomplish the work. Numbers will not overcome the difficulties, nor come, as regards time, within the limits required.

Each packet steamer on each of the great lines, could and should return unto Falmouth alternately, and the boats from Falmouth be prepared to take the longer voyage in their stead. The time each will have to stop at Falmouth will

always allow of time for any material examination and the repairs that may be necessary.

Without actual experience it is impossible to place before the public, in a correct point of view, the whole appearance and state of steamers employed in the West Indian mail service, as seen last year—when the whole extent of their voyages was travelled over in more than one of them:—imagine a small ill-contrived boat, an old 10-gun brig, as the *Carron* is, for example, of 100-horse power, and thirty to forty tons of coals on her deck; with a cabin about thirteen feet by ten, and an after-cabin still smaller, both without any means of ventilation, except what two ill-planned, narrow and miserable hatches, when open, afford. Imagine a vessel like this starting from Jamaica, with ten or fifteen passengers, and a crew of thirty-seven people, still more miserably provided with room and quarters, to stem the currents, the trade winds—(not to speak of storms,)—which blow, and the heavy seas which roll, between that island and St. Thomas, especially in the channel between the former and St. Domingo, and indeed in all the West Indies: having the boiler immediately adjoining the cabin and sleeping berths, and without any place to stow the luggage belonging to the passengers,—and with the numerous mail bags crammed into the small sleeping berths, or under the table,—and the public will have a faint idea of a Government steam-boat; wherein, under a tropical sun and a tropical rain, the passengers and crews are, with the hatches closed, reduced to the choice, while choked with coal-dust, of being broiled or suffocated. No human constitution can long stand this. Without meaning any offence, truth must declare, that such a state of things is a disgrace to England.

The most urgent haste and necessity can alone bring individuals to travel by such conveyances, and none will do so whose time will allow them to look for other modes of conveyance and transport. Female passengers, in particular, without female attendants, or room for them, will never willingly undertake, certainly never repeat, a voyage under such circumstances. It would seem that, in this respect, the vessels belonging to the most powerful, enlightened, and civilized

Government in the world, are to be placed far below the level of vessels belonging to their own subjects, and those of other nations; although such vessels are expressly appointed to convey passengers.

With these preliminary observations, it is proposed to consider the details of a plan for the more extended conveyance of mails by steam-boats, first to the WESTERN WORLD, under the separate heads into which such a plan necessarily and properly divides itself. In doing this, it will satisfactorily appear that the more the plan is extended, the less in proportion will the expenses attending the same be, and the greater the returns be therefrom.

I.

*Falmouth and Madeira, or one of the Western Islands,
Department.*

EITHER of the islands just named may be made central points of the greatest importance for connecting the mail communications between Great Britain and all the Western World. The Western Islands, however, become a central point, more direct and convenient than Madeira, for all the outward and homeward West Indian packets, and still more so for all those which may be bound for New York and British North America. In short, the packets for neither of the latter places could go or come by Madeira without great inconvenience and loss of time; whereas, neither would take place if Fayal is made the point of arrival at and departure from. The latter island is directly in the course of both the West Indian and homeward-bound South American packets; and it may be said with equal accuracy, in the outward direct course of these packets also. Although a little further removed into the variable winds than Madeira, still it is well known that Fayal once made, the greatest difficulties in the voyages of the outward-bound packets are overcome. The distance, also, from Falmouth to either of these islands is not materially different: from Falmouth to Madeira direct, is 1170 geographical miles; and from Falmouth to Fayal direct, 1230 miles. In the outward voyage Fayal is 300 miles nearer Barbadoes than Madeira; and in the homeward, from Cape Nichola Mole, 300 also. The distance between Madeira and Rio de Janeiro, and between the latter and Fayal, is not greatly different, being (taking in Bahia and Pernambuco) for the latter 3900 miles, and for the former 3800; but from the course which the homeward packet must take through the trades, the distance

to Madeira, as compared with the distance and course to Fayal, would be increased by 250 miles. On the whole, considering the advantages and disadvantages to arise from making either of these islands, viz., Madeira and Fayal, the central points, it would appear that the balance would considerably incline to be in favour of any one of the central Azores, say Falmouth and Terceira or Fayal. Fayal being taken as the central point to which and from which the packets for the western world are to converge and to diverge, the arrangements will run as follow:—

The steam-boats from Falmouth to Fayal would carry out all the mails from Great Britain to the Western World; viz.: for British North America, for New York, for the British West Indies and all the Gulf of Mexico, and for the Brazils and Buenos Ayres, as also for Madeira and Teneriffe. From Falmouth to Fayal is, course S. 55° W. distance 1230 geographical miles. Two steam-boats of 240-horse power each would perform this work out and home, giving two mails each month, each boat returning with the mails for Great Britain from all the places mentioned, to be brought to that island in a manner which will shortly and more particularly be pointed out. In fine weather each boat would make the voyage within six days, and in rough weather in seven days,—but say seven days at an average. Each boat would be at sea 14 days each voyage = 28 days monthly = 336 days yearly; 25 tons of coal per day = 8400 tons yearly; which, at 20*s.* per ton, is 8400*l.* annually. The yearly cost of the two boats for this station would therefore be: (prime cost of two, 48,000*l.*)—

Two boats' wages and provisions, &c., at £6200.	12,400
Coals for do., yearly	8,400
Total	<u>£20,800</u>

The stoppage at Fayal would depend upon the arrival of the packets with the mails from the Brazils, the West Indies, &c. &c., but the arrangements for all these will be such as will bring the stoppage not to exceed one or two days, and which will prove no more than sufficient to take in coals, water, &c. &c. Despatched from London on the 1st and 15th day of

each month, the steamers from Falmouth, with all the mails, would reach Fayal on the 10th and 25th of each month, from whence they would immediately be despatched to their ulterior destinations. By this arrangement Government would save at least three West Indian or Barbadoes packets, one Halifax and one Rio de Janeiro packet (exclusive of six Mexican packets saved, but included in the West Indian department), after giving to the two quarters of America last mentioned two mails instead of one each month, and which saving would, at least, be 21,000*l.* yearly. The voyages also from England to every quarter connected with this arrangement would be greatly shortened, even were the communications by steam to be carried no farther; as every nautical man knows well that it is between the Western Islands and the English Channel, whether outwards or inwards, that the greatest detention in every voyage, whether it regards packets or any other vessels, takes place. In a particular manner the arrival of the outward packets at Barbadoes would be more regular, almost quite regular; and thus *extra* steam-boats in that quarter, on account of the irregularities in the arrivals as under the present system, would be rendered unnecessary; and the same thing may be said of every other quarter to which the plan and the chain of communication is intended to extend.

*Fayal.**

All the outward mails from Great Britain to the western world, having reached Fayal, they would be despatched from thence and return back to it, under the following arrangements and regulations. Take them in order as follow:—

* The Island of Fayal is chosen as the point of communication in preference to Terceira, &c. because during the few months when one side is exposed to storms, the other side is well sheltered, and the distance is very short from the one side to the anchorage on the other. As each of the steamers from the westward and southward will proceed to Falmouth in her turn, so if all the mails are up at Fayal before the outward steamer arrives from Falmouth, the steamer whose turn it is to proceed on to Falmouth, will go forward with the mails without any delay, except to take in coals.

II.

Fayal and North America.

The rising importance of British America renders it highly desirable, nay, absolutely necessary, that a more frequent and regular post communication should be established with it. This might be done so as to secure all the Post-office revenue derivable from the letters to and from that quarter of the empire with Great Britain; and not only so, but to draw from the United States unto England some of that postage and some of those passengers which belong specifically to those States. To carry this into effect, it must be done by steam-boats, and Fayal made the point of communication from which the mails are to diverge, and to which they are again to return. The point of communication with Fayal should be either by Halifax to New York, or to Halifax alone; from which place the steamer to run to the West Indies could carry the European mails to and from New York. In each way the details will be as follow :—

Fayal to New York, by Halifax.

From Fayal to New York direct is 2020 miles; and from Fayal to New York, by Halifax, is 2160 miles. If this course is adopted, there would be no need for any stoppages at Halifax, except to land the outward mails, &c., and pick up the inward, or homeward-bound European mails, &c. The steamers, with the outward mails on board, would proceed from Fayal on the 10th and 25th of each month, and reach New York, by Halifax, on the 7th and 23d of each month, or in thirteen days. Leaving New York on the evening of the 9th or 10th, and the 25th or 26th of the month, with the return mails from the States, and calling at Halifax for all those from British America, the steamer would reach Fayal in thirteen days, or on the 8th and 23d of each month, exactly in time, as will by-and-by be shown, for the homeward-bound West Indian and Brazil mails coming up to the same place; and two days previous to

the arrival of the outward packet from Falmouth, after allowing two days to stop at New York, and having one day to spare, in the event of severe weather on the voyage. The course and time will be:—

	Geo. Miles.	Days.
Fayal to Halifax	1640	10
Halifax to New York	520	3
Stop at New York	"	2
New York to Fayal, by Halifax . .	2160	13
Totals	4320	28

Two steam-boats would perform this work, giving two mails each month, prime cost 48,000*l.*; wages, provisions, &c. &c. 6200*l.* each, 12,400*l.* Each boat would be at sea 26 and 26 = 52 days, monthly = 624 yearly; 25 tons of coals daily = 15,000 yearly, at 25*s.* per ton, 19,500*l.*

This would, however, be close work for two boats, in the event of accidents; and therefore a spare boat would be required, at an additional expense of 24,000*l.* capital, and 6200*l.* yearly charges. But two may be rendered quite sufficient by making Halifax, instead of New York, the point of communication between Fayal and British North America; the communication with New York to be taken up, and carried on, by the steamers proposed to run between North America and the West Indies, as explained and stated under the next head. Fixing the communications in this way, the details, or the course and time, would be:—

	Geo. Miles.	Days.
Fayal to Halifax	1640	10
Rest there, say	"	8
Halifax to Fayal	1640	10
Totals	3280	28

Two boats would be quite sufficient to perform this service, and the advantage would be gained of having a British port as the port for trans-shipment. Each boat would be at sea 10 and 10 = 20 days each voyage = 40 monthly = 480 yearly; coals, 25

tons daily=12,000 tons yearly, at 25s.=15,000*l*. The periods for the arrivals and departures of these Halifax and Fayal steamers will be found to agree well with the arrivals and departures of the steamers to run between Halifax and the West Indies, by way of New York, as minutely particularized under the next head.

Halifax ought to be made the point from which, and to which, all the British North American, foreign, that is, transmarine correspondence, ought to converge and diverge. It can be made to do so readily, and with advantage, as the following distances will show:—

	Distance.	Geo. Miles.
New York to Quebec	N. 19° East.	390
New York to Montreal	N. 4° E.	305
Halifax to St. John's, by Annapolis	N. 71° W.	111
St. John's to Quebec	N. 66° W.	230
Quebec to Montreal	S. 58° W.	116

Thus it is obvious that Halifax is nearer England three and a half days each way than New York; that much time would, by the above course of post, between the mother country and all her North American possessions, be saved, while all the advantages of carrying these mails and passengers, &c. would be gained by British shipping and British subjects.

The communications could be carried on between Fayal and Halifax, &c. by sailing packets instead of steam vessels; but then these sailing packets, on account of the number of passengers which it is almost certain would travel by them, would require to be packets of the largest size, or first class. Their average voyages may be taken at sixteen days each, with six or eight to stop at Halifax, which would bring the full voyage to forty days. This would throw the return letters always one mail, or fifteen days, later for Europe, than if steamers were employed; but, at the same time, it would bring their arrival at Fayal to be regular, and in sufficient time for the succeeding homeward packet from Fayal; for, if they go beyond thirty days, their return within forty-five days, *in this or in any other station*, would meet the central point at Fayal equally well, as to

dates; but such a detention would not only occasion so much loss of time to the course of correspondence, but give letters a chance of reaching Europe sooner from New York direct. Two sailing packets would perform this work in the unavoidably extended time mentioned, giving two mails each month; first cost 9,500*l.* = 19,000*l.*; yearly charges 4200*l.* each = 8400*l.*

III.

North America and West Indies.

The intercourse between these quarters of the world, and also of each of these with the United States, is already of great importance, and will daily become more and more important, while there is, at present, no mail communication between them. A regular, and frequent mail communication in that quarter has become indispensably necessary. While this fact must be admitted, it is of great importance to have as many of the points of combination under the British flag as possible. Keeping this desirable point in view, it is necessary to observe, that this must be done, taking Havannah into the line; because, if it is not included in the British line, it will be forthwith occupied by parties from the United States, and letters, passengers, &c. both for all North America and for Europe, from the West Indies, will go by these States, New York for example. The arrivals and departures of the steam packets on this line must also be calculated, and fixed so as to agree with the arrivals and departures of the outward and homeward-bound mails by Fayal, for North America, and also for all the West Indies, southwards to Havannah and Mexico.

The desirable object of bringing the most important central and trans-shipping points under the British flag, can only be gained by making in this case the run of the steamers to be from Halifax, by New York, to the Havannah; or from New York, by Havannah, to Jamaica. While the various ways by which this

latter could be effected are here stated, still the former will be found to be the most economical, certainly not the most inconvenient, and, on many accounts, the preferable mode. At Havannah the North American steamer would meet in the most regular manner, and to a day, the steamers from Havannah to Vera Cruz; and from Havannah to Jamaica, Barbadoes, &c. &c. The route and time of these boats would be as follows:—

	Geo. Miles.	Days.
Halifax to New York	520	3½
New York to Havannah	1140	6½
Stop at Havannah, say		2
Havannah to Halifax, by New York .	1660	10
Totals	3320	22

Two powerful boats would be perfectly sufficient to perform this work, giving two mails each month; first cost 48,000*l.*, yearly charges 12,400*l.* Each boat would be at sea 20 days each voyage = 40 monthly = 480 yearly; coals daily, 25 tons = 12,000 tons yearly, at 25*s.* = 15,000*l.*

The outward European mails would arrive at Halifax on the 20th and the 4th or 5th of every month, and at Havannah on the 31st or 1st, and 15th or 16th of each month. Leaving Halifax on the days above mentioned, the steamers, by way of New York, would reach Havannah on the 30th and 15th of each month, and, allowing two days at Havannah, return to Halifax by way of New York, on the 14th and 29th, eight days before the arrival there of the outward European packet, giving abundance of time to rest. This steamer will bring back from New York the answers to the letters received from Europe for the return packet from Halifax to Fayal. These letters would reach New York on the 23d and 8th of each month. The stoppage at New York by this steamer returning northward could not be beyond one or two days. To meet the West Indian and South American packets returning to the central point, Fayal, the steamer, with all the North American correspondence, must leave Halifax on the 29th or 30th, and the 13th or 14th of each month. Considering attentively the calculations here made, it

will be found that they correspond accurately, and that in practice these will work admirably, and without confusion or delay—points, in an affair of this kind, of the greatest importance.

The other plan, by which the communication between North America and the West Indies can be opened up and carried on, is between New York and Jamaica, by the Havannah. After considering it, in all its bearings and details, the former will appear to be the most economical and eligible. Calculating the whole of the General Plan to be carried into effect, and by steam, the outward mails from Europe, *via* Fayal and Halifax, would arrive at New York on the 7th or 22d, or the 8th and 23d, of each month; and those for the West Indies, *via* Fayal and Barbadoes, at Cape Nichola Mole, Hayti, on the 11th and 27th, or 12th and 27th, and at Jamaica on the 13th and 28th of each month. The mails from the westward and southward of, and for Jamaica, would consequently return to that island on the 7th and 22d of each month. The distances and time taken in three ways between Jamaica and New York, by Havannah, would be—

(No. 1.)

	Geo. Miles.	Days.
New York to Havannah	1140	6½
Havannah by Matanzas, to St. Jago de Cuba	630	4
St. Jago de Cuba to Kingston, Jamaica	170	1
Jamaica	„	2
Jamaica to Cape Nichola Mole, by St. Jago	305	2
Cape Nichola to Havannah, by Matanzas	540	3
Havannah, Coals, &c.	„	1
Havannah to New York	1140	6½
Totals	3925	26

(No. 2.)

	Geo. Miles.	Days.
New York to Havannah, by Matanzas	1140	6½
Havannah, Coals	„	1
Havannah to Jamaica, round Cape Antonio	685	4
Jamaica, Coals, Mails, &c.	„	2
<i>Carried forward</i>	<i>1825</i>	<i>13½</i>

CONVEYANCE OF MAILS BY STEAM.

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	Geo. Miles.	Days.
<i>Brought forward</i>	1825	13 $\frac{1}{2}$
Jamaica to Havannah, by Cape Antonio	685	3
Havannah, Coals	„	1
Havannah to New York, by Matanzas	1140	6 $\frac{1}{2}$
Totals	<u>3650</u>	<u>24</u>

(No. 3.)

	Geo. Miles.	Days.
New York to Havannah, by Matanzas	1140	6 $\frac{1}{2}$
Havannah, Coals	„	1
Havannah to Jamaica, round Cape Antonio . . .	685	4
Jamaica, Coals, Mails, &c.	„	2
Jamaica to Cape Nichola Mole, by St. Jago . . .	305	2
Cape Nichola Mole to Havannah, by Matanzas . .	540	3
Havannah, Coals	„	1
Havannah to New York	1140	6 $\frac{1}{2}$
Totals	<u>3810</u>	<u>26</u>

The latter route (No. 3,) will, for various reasons, be the preferable course. First, because while it embraces Havannah in the line, it renders it unnecessary for the steamers to run twice over the same ground that others do. Secondly, the steamer from Jamaica for the eastward being able to leave that island, with all the return Colonial mails from the westward and southward for North America, &c., at the times, or in the space of time, mentioned, would reach Cape Nichola Mole just in time to meet the downward steamer from Barbadoes, with all the Colonial mails to the eastward of that place for North America; and, consequently, could take in and proceed with these mails without delay; and it might, at the same time, take in not only the eastern Colonial mails for Matanzas and Havannah, but the outward European mails for these places also, by which means these towns would receive these two or three days earlier than they could by Jamaica. The Mexican mails might also be forwarded in the same way; but to do so would be of little use, inasmuch as the steamer for Vera Cruz could not leave Havannah until the steamer from Jamaica arrived.

Taking route No. 3 as the lines of communication between Jamaica and North America, then the arrivals at Jamaica would be on the 5th and the 20th of each month; and, allowing two days to stop at Havannah outwards instead of *one* day, and *three* days at Jamaica instead of two, the return steamers would leave Jamaica on the 8th and 23d of each month, and reach Cape Nichola Mole on the 25th and 10th, which place the steamer from Barbadoes reaches on the 11th and 27th, and the Havannah and Chagres steamers return to Jamaica on the 7th and 22d of each month; thus combining every movement requisite in a very clear and satisfactory manner.

The steamers on this route or station would be each 22 and 22 = 44 days each month = 528 days yearly at sea; coals, at 25 tons daily = 13,200 tons, at 25s. per ton = 16,500*l.*; which is 1500*l.* more than the other. Moreover, the steamers (two) would be so closely pressed for time as not to have the necessary rest for examination and repairs, and consequently a third would be requisite, which would increase the capital 24,000*l.*, and yearly charges 6200*l.* above the other plan.

The mails on this station may, moreover, be carried by sailing packets. By this mode of conveyance, however, the mails would be longer on their voyages; those to and from Halifax, &c., being always thrown behind one return mail for the steamer to and from Fayal with the mail for Great Britain, and consequently be obliged to wait at Halifax or New York for a succeeding one—but for which, however, they would always be in ample time. The course and time by sailing packets would be—

	Geo. Miles.	Days.
Halifax to New York	520	5½
New York to Havannah	1140	10
Stop at Havannah, say		2
Havannah to Halifax, by New York	1660	15½
Totals	<u>3320</u>	<u>33</u>

which will allow abundance of time to stop at New York, going and returning, and for meeting every possible contingency which may occur in the voyage; as, if within forty-five days, it would be

in time to meet the corresponding packets to and from Europe. Two sailing packets would be sufficient to perform this work, giving two mails each month; prime cost, 9500*l.* each = 19,000*l.* and yearly charges 4200*l.* each, or 8400*l.* It may here be observed, that if all the mails were carried by sailing packets on the four great lines, that the times of their arrivals and departures would still connect and combine properly, but, as has already been remarked, be always fifteen days later in the course of the mails between the places mentioned than if these were carried wholly and everywhere by steam.

IV.

Fayal and Brazil Department.

From Fayal steamers would proceed direct to Rio de Janeiro, calling at Pernambuco and Bahia, and landing at the former place the mail for Maranham, to be carried forward to that place, and brought back to Pernambuco, to meet the steamer on her return to the northward, by a good sailing vessel. The distance is 670 miles, which could be performed in four days and six days, backwards and forwards. At Rio de Janeiro the steamer will land the mails for Buenos Ayres and Montevideo, which will be carried forward by sailing vessels to the former place (distance 1060 geographical miles), and return from Buenos Ayres, by Montevideo, to Rio de Janeiro, the same distance, say in seventeen days, and in time to catch the following homeward-bound packet. One sailing vessel would be sufficient for the Pernambuco and Maranham station, and two of a superior class as at present for the Rio de Janeiro and Buenos Ayres department; for, at the outset, steam would be too expensive on the latter station, while it would take the homeward-bound packet too far out of her way to make her call at Maranham.

From Rio de Janeiro the steamer will proceed for Fayal, calling at Bahia and Pernambuco (distant from Rio 1000 miles),

taking in the Maranhão mail at the latter place, stopping one day there for a supply of coals, and then proceeding, reach Fayal in twenty days—including stoppages, forty-five days forwards and backwards—and which, accordingly, would bring the Brazil mails to Fayal to correspond with the arrival there of the steamers from both the West Indies and Halifax. The mails from the Brazils would, in this way, reach Fayal on the 10th and 25th of the month. The route and time of these steamers would be as follows:—

	Miles.	Days.
Fayal to Rio Janeiro	3900	19
Rio de Janeiro to Fayal	3900	20
Stop at Rio	„	2
Do. at Pernambuco, &c., twice	„	4
Totals	<u>7800</u>	<u>45</u>

Three steamers would perform this work in the time specified, giving two mails each month. Each boat would be actively employed, or at sea, 39 days each voyage = 78 monthly = 936 yearly; coals, at 25 tons daily = 23,400 tons yearly—which, at 25s. per ton, will amount to 29,250l. Other charges, 18,600l.

The mails on this station might also be carried by sailing packets, and at much less expense, but the time occupied would be considerably lengthened. Such sailing packets from Fayal to Rio de Janeiro would, both in going and returning, pursue the same course that the present packets do. The distance each way would be the same, and not materially different from the course which the steamers would take. The time occupied would be, twenty-seven days out, twenty-nine days back, and four days to stop at Rio, &c.; in all sixty days. Four packets would perform this service, giving two mails each month. The cost of these packets would be 38,000l., and their annual charges at 4200l. each = 16,800l. In the event of accidents, however, either on this or on the West Indian station, one spare packet would be necessary, and require to be stationed at Fayal: this would increase the capital laid out to 47,500l., and the yearly charge to 21,000l. Four packets on

this station would, in fact, under this arrangement, give two mails each month; whereas, under the existing arrangements, it requires five or six to give one mail each month. In a few days, after leaving Fayal, it is well known that both the Brazil and West Indian packets would be into the trade winds when outward-bound; after which, the voyage is certain and secure. In like manner in returning, after getting clear of the trade winds, the Brazil, in about long. 38° , and the West Indian, from Cape Nichola Mole, in about long. 70° W., each could steer to the eastward for Fayal, with almost certainly southerly winds, and at all seasons of the year, in weather comparatively mild to that which is met with in more northern parallels.

By steam-boats the course of communication between Great Britain and Rio de Janeiro would be reduced to sixty days, and by sailing vessels, from Fayal to that place, to seventy-five days, making fifteen days more by the latter than by the former; but it may, however, here be observed, that arriving so much later at Fayal, would still equally correspond with the arrival of the West Indian and North American sailing packets at that place.

V.

Fayal and Madeira, &c. Station.

Under the proposed general arrangement, the mails for Madeira and Teneriffe could be sent twice each month from Fayal. Madeira and Teneriffe, but more especially the former, have a good deal of correspondence with the West Indies; all of which would be thrown into a more tedious and circuitous route if the communications with Madeira did not go and come by the Azores. The distance from Fayal to Madeira is 630 miles, and from Madeira to Teneriffe 240 miles. One superior sailing vessel would be sufficient to perform this work, giving two mails each month. It is well known that from the winds which

generally prevail in those parts of the Atlantic, that a swift sailing vessel would almost always make quick and certain passages. The cost of such might be 1500*l.*, and the yearly expense, say 800*l.* The expense for sailing vessels on this and the South American station may be taken as follows:—

	Capital.	Yearly Charge.
Fayal and Madeira, one	£1500	£800
Pernambuco and Maranham, one .	1500	800
Rio de Janeiro and Buenos Ayres, two	4000	2000
Totals	<u>£7000</u>	<u>£3600</u>

From Fayal to Teneriffe, by Madeira, and back, a sailing vessel could complete the passage in fourteen days, and thus be always in time for the next return steamer from Fayal to Falmouth.

VI.

Fayal and Barbadoes Station.

On the arrival of the steamer from Falmouth at Fayal, another steamer would start for Barbadoes, carrying with it all the mails for every place in the western Tropical World, from Demerara to Vera Cruz inclusive, and also for Panama, and other places on the coasts of the Pacific Ocean. The route from Fayal to Barbadoes is, course S. $47\frac{1}{2}^{\circ}$ W.; distance, 2255 geographical miles. A steam-boat would perform this, going chiefly through the trade winds, in twelve days. The period of her return to Fayal must be regulated by the time which she has to stop in the West Indies, and which will be more specifically shown when that department is taken into consideration; but it cannot be less, from Fayal to Fayal again, than forty-five days, of which this boat will be at sea each voyage thirty-seven days. Four steamers would do this work, having one, in fact, to spare, in the event of accidents, either on this or on the Brazil station, and to relieve alternately the steamers on either station;

and this spare boat would probably be best stationed at Fayal, or perhaps Barbadoes. Three boats would, therefore, be actively engaged in performing the work alluded to on this station; each would be at sea 37 days each voyage—74 monthly, 888 yearly, which, at 25 tons of coals daily, will require 22,200 tons annually—at 25*s.* per ton, will amount to 27,750*l.*

The time and course of these boats will be more specifically stated under the West Indian head.

The cost would be thus:—

	Capital.	Yearly Charge.
Four Steamers	£96,000	£24,800
Coals		27,750
Yearly charges		<u>£52,550</u>

The mails, also, on this station, might be carried by sailing packets, and which would require to be of the very first class. Their time from Fayal to Fayal again, would be, say nineteen days to Barbadoes; seventeen days to stop in the Colonies; and twenty-four days from Cape Nichola Mole to Fayal (2600 miles), together sixty days; and which brings the return of this sailing vessel to Fayal to correspond with the arrival of the packets from Falmouth, and of the mails from South America, and from North America, at that place. Four packets would be sufficient for this station, giving two mails each month. Their cost would be 38,000*l.*, and their yearly expenses at 4,200*l.* each, 16,800*l.*—considerably cheaper than steam, but lengthening, as has been seen, the communication between Great Britain and that quarter of the world, *fifteen* days. A spare packet might be necessary, but the cost of that has been included, and stated under the South American head.

VII.

The West Indian Station.

This station is one of the most important, and extensive, and complicated of the whole, and one where steam-vessels can be employed with the most beneficial effects. The prevailing winds and currents, however, render it necessary that the vessels employed should be of high power, in order to enable them to stem those winds and currents. Into the Gulf of Mexico, through the Windward islands, sets; first, the equatorial current; secondly, the prodigious current occasioned by the influx of the waters of the great river Marañon, and of the several rivers which flow through British, Dutch, and French Guiana; thirdly, the current occasioned by the influx of the waters of the great river Orinoco, through the Gulf of Paria, between the island of Trinidad and the mainland of South America. These united waters, directed by the trade winds, blowing always from the eastward, occasion a current of such force, running westward from the Windward Islands to the shores of Mexico, that it is frequently impossible for the best sailing vessels to make their way through it. Steam-boats, therefore, of at least 240-horse power, are indispensably necessary, in order that they may not only be able to stem these winds and currents, and carry a sufficient quantity of coals, but also to afford spacious and well-ventilated accommodation, both for the crews attached to them, and also the passengers which may travel by them. Without such, neither the one nor the other could ever enjoy health, nor could the despatches of Government, and the correspondence of individuals, be conveyed with that celerity and regularity which these could otherwise be, and which it is necessary that they should be.

In carrying a more general plan into effect, no reasonable or necessary expense ought to be spared by the country. In such a general plan it will be seen by the subsequent details, that

the steam-boats of the power mentioned, assisted by nine sailing schooners (at present ten, are employed in less than half the work,) would be sufficient to convey the mails from Barbadoes to every place of importance in the western Tropical Archipelago, or connected with it. This force would give two mails each month to every island and colony from Demerara to Vera Cruz; taking in Laguayra, Carthagena, Chagres, Honduras, the principal parts of Cuba and Porto Rico. From Demerara to Havannah and Chagres, &c. inclusive, every colony and place would be able to reply to the letters received from Europe, or the Colonies, by the same packet which brought them; and still that packet remain in the West Indies a shorter period than the packets now do.

In this department there are two stations, however, of such vital importance, that the considerable additional expense which will be required to place steam-boats on them from the outset, ought not to be taken into consideration. These are, first, the station between Jamaica and Chagres; and, secondly, the station between Jamaica, Cuba, and Vera Cruz. The first goes to connect the Great Pacific Ocean, and the coasts thereof, with Europe and the eastern coasts of America, and on which former coasts a steam mail communication has been already concerted. Through the channel from Panama to Chagres will be concentrated, as it were, into a funnel the whole movements, travelling and mail communications and money transactions of the western coasts of America, from California on the north, to Valparaiso on the south, the whole of which again must converge to and diverge from Jamaica.* The second

* Should the Colombian Government obstinately and ignorantly oppose the transmission of mails across the isthmus from Chagres to Panama, or propose to shackle this point of communication with unreasonable and inadmissible restrictions, then in that case there remains a point, it is believed, more practicable, safer, and more eligible, where the communication could be effected, namely, in the State of Guatemala, or Central America, by the River St. Juan's and Lake Nicaragua, both of which are navigable for vessels of any size. The south-west shores of the lake in question approach to within fourteen or fifteen miles of the Pacific, and this distance, in one place, through a valley nearly level throughout, and at but little elevation above the level of the sea. From Lake Managua, or Leon, the distance to the sea is still shorter, being, in one place, according to good maps, not more than eight to ten miles. From this lake also,

station, or that from Cuba to Vera Cruz, is little inferior in importance to the other, that town and Tampico being the great outlets of the trade and the commerce, but more especially the outlets of specie from the kingdom or empire of Mexico. A steamer on this station becomes indispensable, in order to secure the safe conveyance of specie, because small sailing vessels would be liable to be attacked and plundered by pirates. With steamers all would be safe.

Two powerful steamers would be sufficient for both stations, in order to carry two mails each month. That steamer to run between Cuba and Vera Cruz, would always be in time with the return mails for the following packet from Europe; while that boat which runs between Jamaica and Chagres would, by returning immediately by the route afterwards pointed out, always be in time for the same packet at Jamaica. To stop at Chagres for the mails from the Pacific would not be advisable or proper, because the arrival of these mails at Chagres could not be calculated upon with any certainty. If at Chagres when the outward mail arrives, good and well, they would be immediately taken up and carried forward; but if not, then they would be brought forward by it on the next voyage, and in time for the following European packet.

The mails for Honduras will be most conveniently forwarded from Montego Bay, Jamaica. With the mails for the western parts of that island they could be landed at Savannah la Mar, and thence carried by land with the others, about twenty-five miles, to Montego Bay. From thence a good schooner would

and the capital, Leon, the distance north-west to Rialejo, a fine port on the Pacific, is twenty-three miles, and through an accessible, if not very easy country. The Government of the Republic of Guatemala, or Central America, would doubtless be ready to afford every facility to open such a communication, which would prove the greatest and most certain means of improving their country. Moreover, if a ready communication is once afforded, from any point on the east coast of America, in the places alluded to, it would speedily become the object and the interest of the Chilian, the Peruvian, and the Mexican Governments to watch and to see that the communication with the world to the eastward should not only be rendered secure, but be maintained. Also, with a communication opened in this quarter, such as it is believed can be opened, the commerce and communications between North America and Europe, and New South Wales, China, and all Eastern Asia, would most certainly, as it could most advantageously and expeditiously, be carried on by it.

proceed with those for Honduras and Trinidad de Cuba; and having reached Honduras, return to Montego Bay by Trinidad de Cuba. By this arrangement, Honduras rather gains more than by the plan first proposed, to go from Batavano; and the letters from thence will still and always be in excellent time for the following packet, making every allowance for casualties during the voyage. The steamer could then proceed direct from Jamaica to Havannah, which would save one day each voyage, besides avoiding the difficult navigation about Batavano. The coals saved yearly would be 1100 tons, 1475*l.*, which would do more than pay the expenses for an additional schooner for the Honduras communication; for, by this arrangement, two schooners, instead of one, will be necessary. Their route and time would be—Montego Bay to Trinidad de Cuba, 172 miles, 1½ day; Trinidad de Cuba to Honduras, 520 miles, 3½ days; back to Montego Bay by Trinidad de Cuba, 692 miles, 10 days; stop at Honduras 3 days; in all 18 days.

Bermuda being a great naval depôt, a ready communication between it and every part of the West Indies becomes an object of the greatest importance. Under the general arrangement proposed, this communication can be best effected from and with Cape Nichola Mole, Hayti; because the downward steamer from Barbadoes, with the European and other mails, will have passed St. Thomas before the steamer returning from Jamaica, &c., comes up; by which means all the letters from Jamaica, and every other place to the westward, would, were St. Thomas made the starting point, be obliged to remain at that island till the arrival of a following packet; whereas, starting from Cape Nichola Mole, the mails, both from the eastward and the westward, and also those brought from Europe, would go forward to a day. Moreover, owing to the winds which prevail in those seas, vessels running between Cape Nichola Mole and Bermuda would make passages equally quick, if not quicker, than vessels running between St. Thomas and Bermuda could generally do. The courses and distances stand thus:—

		Geo. Miles.	Days,
St. Thomas to Bermuda.	Nearly due N.	840	9
Cape Nichola Mole to do.	N. 32° E.	890	10
Nassau to Bermuda.	N. 57° E.	800	7
Crooked Island to Bermuda.		740	7
Ditto to Cape Nichola Mole.	S. 19° W.	146	1
Ditto to Nassau		270	1½
Cape Nichola Mole to do.	N. 56° W.	380	2½

The communication might still, however, be from St. Thomas, the boat destined for Bermuda stopping at that island, when this was necessary, one day, until the boat from Jamaica came up; taking particular care always to be back at St. Thomas, from Bermuda, before the steamers with the outward mails from Europe came down from Barbadoes, in order that the letters from Bermuda for Jamaica, and all places to the westward of St. Thomas, may go forward by the steamer in question. This department, however, for Bermuda may, it is conceived, be best amalgamated and interwoven with the Cape Nichola Mole, Nassau, and Crooked Island (*the Bermuda mail vessels going and returning by Crooked Island*) department; as the practical working of the whole scheme may point out to be most advisable.

In the event of packets arriving from England at Barbadoes within a day or two of each other, as is sometimes the case under the existing arrangements, then on the Barbadoes and Demerara stations, let a good sailing vessel, on the arrival of such packet, take the place of the steamer for the voyage. Unless, in case of calm weather, this sailing vessel could do the work thus:—Barbadoes to Demerara, four days; stop there two days, forwarding the mails for Berbice by land; thence with the return mails proceed on by Tobago and St. Vincents in five days, to the packet at Grenada, found, in such a case, either waiting one day longer at Grenada, or else beating up to St. Vincents, there to meet the Guiana and the Tobago mails, and which the packet has time to do. This would occasion little irregularity or delay, because the cause of the detention, should detention occur, would always be known. Moreover, the season of the year when the outward packets arrive at Barbadoes the most irregularly, is during the winter

months, from November to March, and in which period the calms—the greatest obstructions, in many cases, to sailing vessels amongst the Windward Islands—are almost unknown.

The same temporary substitute could be applied, under similar circumstances, on the stations between Jamaica and Chagres, and between Cuba and Vera Cruz. Even if these places were once or twice in the year to miss a return mail to Europe, it would not be of such great importance, because each place having then two mails every month, the detained mail would go forward by the next opportunity, while it would save to Government, or to a contracting company, a very serious expense, which would otherwise be incurred if they were obliged to have additional steamers for this *probable* part of the service.

Further, in the event of any accident happening to any steamboat on the great line from Barbadoes to Jamaica, &c., a sailing vessel could always carry the outward mails westward, when breezes hold, with almost the same rapidity as steamers; and in her course westward, such a sailing vessel could scarcely fail to meet a return or a spare steamer at some of the stations, to relieve it from proceeding further.

Moreover, it may be observed here, once for all, that by the conveyance of the mails from Falmouth to Barbadoes by steam, or even only so far as from Falmouth to Fayal by this power, the irregularity of the arrival of the mails at Barbadoes, which at present takes place, would be nearly done away, and consequently no such assistance as that alluded to would be necessary. Hence, the advantages either way over the present system are clear and obvious.

Before entering upon the particular details of the West Indian department, it is proper to observe here, that the point of communication for the return mails from the West Indies for Europe, so long as sailing packets are employed to the West Indies, cannot be altered or removed from Cape Nichola Mole, because, by the general plan, the outward mails from Great Britain, by steamers, would reach Fayal on the 10th and 25th of each month, and the return mails to that place would reach; from Rio de Janeiro, on the 9th and 24th; from New York and Halifax on the 7th or 8th, or 22d or 23d; and from

Barbadoes, &c., allowing only sixteen days in the Colonies, on the 10th and 25th (App. No. 1.); if brought by sailing packets on dates to correspond; so that there is not time to spare, the West Indian mail being the last to reach the central point, and it would be very detrimental to have any detention of the general mails at this point. To make Jamaica the central point for the European mails, would require several days additional; for once at Jamaica the packet would take eight or ten days to get up and through the windward passage, which to a sailing packet, notwithstanding this difficulty, is still the best. In fact, if the mails from Havannah to Demerara are detained in the West Indies more than sixteen, or at most seventeen days, beyond the time that these could, by care and exertion, be easily despatched from thence, the transmission of letters by private ships to every quarter will most unquestionably be resorted to; and thus the Post-office revenue suffer severely.

The capital and expenditure in the West Indian department under the combination and regulations just mentioned will be:—

	Capital.	Yearly Charges.
Six Steamers, at 24,000 <i>l</i>	£144,000	£37,200
Nine Sailing Schooners, at 1500 <i>l</i>	13,500	7,200
Coals for Steamers, 30,000 tons, at 25 <i>s</i>		37,500
	<u>£157,500</u>	<u>81,900</u>

It is necessary here to observe, that the calculation taken for the consumption of coals is founded upon the basis that the coals are of the very best quality, and also that the machinery is of the best and most economical description and construction, and for a vessel of 240-horse power. The time that the steamers are considered to be engaged in actual work is calculated to include the time passed in getting up the steam in each voyage, and also to cover all temporary stoppages. The time allowed on every route and station is, on the average, more than will be required. Steamers of the force mentioned will, in good weather and light breezes and seas, even when contrary, run ten geographical miles per hour; and, within the tropics, with trade-winds and currents in their favour, at a still greater speed: but the average

performance may be fairly taken at 200 geographical miles each twenty-four hours, although in all the climates within the variable winds, and in the tropics when going against the winds and currents, the speed made good will be, and is taken at, much less. Moreover it is proper to observe, on the point of outlay for coals, that the work is everywhere, as regards the quantity to be used, calculated as if wholly done by steam, while it is obvious that the assistance of sails may be had recourse to with advantage. For this purpose, those steamers which have to go into the torrid zone ought to be provided with large square fore-sails. The assistance to be obtained by the use of sails would save a considerable quantity of coals; or what is the same thing, using them would expedite the steamer proportionally more on her voyage, and bring it so much sooner to a close. Sails may fairly be calculated to impel a vessel at the rate of $2\frac{1}{2}$ miles per hour on a voyage, and which will save either directly *one-fourth* the quantity of coals, or impel the steamer so much sooner to the end of her journey than the time calculated, where time is taken as if it were impelled by steam alone, and thereby a proportional saving of fuel will be effected. The saving effected on this ratio will, on the General Plan, be 27,000 tons, 33,250*l.*; on the West Indian portion thereof 7500 tons, 9375*l.*; and on the West Indian and the Falmouth and Fayal department, 9600 tons, 11,475*l.*; subject to 10 per cent. deduction, being allowance for wastage.

As regards the calculations made concerning the progress of steamers in the voyages to be made, it is satisfactory to find, from intelligence lately received, that the *Berenice* steamer, of 230-horse power, made the passage from Falmouth, by the Cape Verdes, Fernando Po, the Cape of Good Hope, and the Mauritius, to Bombay, in eighty-eight days; *sixty-three at sea*. The course taken, and distance run, is about 12,200 geographical miles, or at the average rate of 194 geographical miles per day. Her average consumption of coals was fifteen tons per day. The *Atalanta*, of 210-horse power, ran the same distance in 106 days; sixty-eight of which at sea, under steam. Consumption of coals, seventeen tons per day. The *Flamer*

steamer, of 140-horse power, now in the West Indies, two voyages in succession, last autumn, made the voyage from Barbadoes to Jamaica, by Jacmel, Hayti, in five days; which is fully nine geographical miles per hour; and in returning she ran in one voyage from St. Lucia to Barbadoes in twelve hours, distance 100 geographical miles, with winds and current unfavourable. Adverting to these facts, it is obvious that sufficient time is allowed for the progress of the steam-boats, in every station, under the General Plan now recommended to be adopted, in order to communicate with the different places in the Western World. The *Berenice's* greatest run was 256 miles in twenty-four hours.*

West Indian Station.—Details.

This is a complicated and important department, and the working details thereof must be planned as follows:—

1.—*First Packet for the Month.*

Immediately on the arrival of this packet at Barbadoes, a steamer of 240-horse power should start for St. Thomas direct (430 miles), with the mails from England, &c. for that island, Santa Cruz and Tortola, and for Porto Rico, St. Domingo, the Bahamas, All Cuba, Jamaica, Carthagena, Chagres, Panama, Honduras, Vera Cruz, and Tampico. This boat could reach and clear St. Thomas in two days.

The steamer alluded to having landed the mails for St. Thomas, St. Cruz, and Tortola, should then proceed to St. John's, Porto Rico, and there land the British and Colonial mails; to Cape Nichola Mole (Hayti), and there land the British, the Colonial, and the Bahama mails; to St. Jago de Cuba, and there land the British and Colonial mails; to Kingston, Jamaica, and there land the British, the Colonial, the Chagres and Carthagena mails; to Savannah la Mar, Jamaica, and there land the British and Colonial mails for all the western

* See also Appendix, No. 1.

parts of Jamaica,* for Trinidad de Cuba and Honduras; and thence to Havannah, with the mails for that place, and Vera Cruz, &c.

At the end of the second day this steamer may start on her return, with the return mails from the Havannah, and the return mails from the preceding packet from Vera Cruz and Tampico, forwarded and brought up as after mentioned, and, proceeding, call at Savannah la Mar for the same, from the western parts of Jamaica, Trinidad de Cuba, and Honduras; at Kingston for the general Jamaica mails, and those from Santa Martha, Carthagena, and Chagres from the same packet, and from Panama, &c. from the preceding packet; at St. Jago de Cuba for the return mails, and thence to Cape Nichola Mole, where it will deliver the whole European mails to the packet arrived there, as will presently be pointed out; from Cape Nichola Mole the steamer will proceed to St. Thomas, calling at St. John's, Porto Rico, with and for Colonial mails, and thence to Barbadoes (calling at all the Islands going up, and carrying up the British mail for Tortola from St. Thomas, left by the downward steamer) to wait to receive a following mail from Great Britain.

On the arrival of the downward steamer at Cape Nichola Mole, from St. Thomas, a fast-sailing schooner to be despatched to Nassau with the Bahama mails, calling, in going and returning, at Crooked Island. This schooner, it is calculated, could be back at Cape Nichola Mole in time to meet the packet at her departure for England with the return mails; if it could not, then the packet could take Crooked Island in her way, and there pick up the Bahama return mails for Great Britain.

Two schooners would be sufficient for this station for the Bahama service, should it be desirable that these islands should have mails twice each month.

On the arrival of the steamer at Kingston, Jamaica, with the outward mails, another steamer to be despatched with the mails for Santa Martha, Carthagena, Chagres, and Panama, calling at

* To touch at Savannah la Mar would scarcely take up one hour, while doing so would be a very great accommodation to the western part of Jamaica.

Chagres first, and with the return mails from Panama, the South Sea, and Chagres, return to Kingston by Carthagena and Santa Martha. One powerful steam-boat would be in time for the same packet; thus:—to Chagres, 550 miles, two and a half days; to Carthagena, 290 miles, one and a half day; stop there one day; to Santa Martha, ninety miles, one day; to Jamaica, 420 miles, three days; in all, nine days.

The mails for Honduras and Trinidad de Cuba by the outward packet having been brought up to Montego Bay, Jamaica, as has been already stated, a good schooner should proceed thence to Trinidad de Cuba, 172 miles, one and a half day; thence to Honduras, 520 miles, three and a half days; stop three or more days; back to Montego Bay, by Trinidad de Cuba, 692 miles, ten days; in all, eighteen days. Two schooners will perform this work, giving two mails each month.

On the arrival of the steamer at Havannah another steamer should be despatched with the outward mails for Tampico and Vera Cruz, and from thence return to Havannah with the return British and Colonial mails. The course of this boat would be,—to Vera Cruz, 800 miles, three and a half days; to Tampico and back, 360 miles, stopping two days, four days; Vera Cruz, back to Havannah, five and a half days; in all, thirteen days.

The route of the mail conveyance from Barbadoes to Jamaica, &c., by steamers, would therefore be:—

	Geo. Miles.	Days.
Barbadoes to St. Thomas	430	2
St. Thomas to Jamaica, by Porto Rico, Cape Nichola, and St. Jago de Cuba	780	3½
Jamaica to Havannah, by Cape Antonio	685	3
Stop at Havannah		2
Havannah to Jamaica, by Cape Antonio	685	4
Jamaica, Coals		1
Kingston to Cape Nichola Mole, by St. Jago	305	2
Cape Nichola Mole to St. Thomas, by P. Rico	480	3
St. Thomas, Coals		1
St. Thomas to Barbadoes, calling at all Islands	500	4
Totals	3865	25½

Each steam-boat being thus twenty-two days, each trip, at sea.

Two powerful boats (240 or 250-horse power each), actively employed, carrying passengers, parcels, and packages, would do this work twice each month, with the addition of one spare one stationed at Barbadoes, or Jamaica ; perhaps the former.

2.—*Windward Station.*

One powerful steam-boat (240-horse power) to leave Barbadoes immediately on the arrival of the outward British packet, for Demerara and Berbice, with the British and Colonial mails, and from the latter return to Barbadoes, having first carried the return mails to the packet at Grenada ; thus :—Barbadoes to Berbice, 450 miles, landing mail at Demerara, three days ; (the mail for Berbice might be forwarded from George Town, Demerara, by land ;) stop at Berbice two days ; to Grenada, calling at Demerara, Tobago, and St. Vincent's, for return mail, 490 miles, four days ; back to Barbadoes, 150 miles, two days ; in all, eleven days : taking with her the return mails from the Colonies at which she had called for Barbadoes, and having delivered the return European mails, and others, to the packet at Grenada.

On the arrival of the British packet at Barbadoes, a fast-sailing schooner to be despatched with the outward mails for Laguayra (dropping at St. Vincent's and Grenada the outward mails for these islands, which would be little trouble to it), and from Laguayra to proceed to St. Thomas, with the return mails for the packet, as at present, and thence return to Barbadoes direct. The route of this boat would be,—Barbadoes to Laguayra, calling first at St. Vincent's and Grenada, 510 miles, four days ; stop there three days ; and to St. Thomas, 490 miles, six days ; to Barbadoes, eight days ; in all, twenty-one days. Two schooners would do this work, giving two mails each month.

On the arrival of the British packet at Barbadoes, a fast-sailing schooner should be despatched, as at present, with the

outward mails from Great Britain for St. Lucia, Martinique, Dominica, Guadaloupe, Antigua, Montserrat, Nevis, and St. Kitts. The boat need proceed no further westward than St. Kitts, because the steamer from Barbadoes had carried forward the Tortola mails. From St. Kitts it will return to Barbadoes, calling at all the islands just enumerated, for the return Colonial mails. The route of this boat would be,—Barbadoes to St. Kitts, calling at the places mentioned, 370 miles, four days; and back to Barbadoes, six days; together, ten days.

On the eighth day after the arrival of the packet at Barbadoes (the despatch of this boat must always be so as to secure its arrival at St. Kitts *before* the packet), a schooner to be despatched with the return mails and passengers from that island, to pick up for the homeward-bound packet mails and passengers at St. Lucia, Martinique, Dominica, Guadaloupe, Antigua, Montserrat, and Nevis, and give to or leave these for the packet at St. Kitts. From St. Kitts this boat returns to Barbadoes, calling at all the islands enumerated for the return Colonial mails. This boat will be the same time out as the one which carried the outward mails, namely, ten days.*

Two schooners will do the work on both the courses here pointed out as necessary, with two spare ones at Barbadoes, in case of the arrival of sailing packets on the heels of each other from Britain, to forward the mails for all the places mentioned, and for Laguayra, making in all eight schooners for this station. There are at present ten, or more.

Instead of remaining at Barbadoes nine days, as at present, doing nothing, the packet herself (whether steamer or sailing vessel) should, on the day after her arrival at that island, proceed with the outward mails to Tobago and Trinidad, delivering those for the former island, and proceeding thence direct to Trinidad, in two days, 230 miles. At Trinidad remain six days, thence with the return mails from it proceed to Grenada, where she will meet the return mails for Europe, brought there by the steamer from British Guiana, Tobago, and St. Vincent's. With

* If the packet is a steamer, these boats will be saved, because the steamer would save so much time as to enable it to call at all the islands northwards, to pick up the return mails.

these collected, proceed on the tenth day from Grenada to St. Kitts, 330 miles, two and a half days. At that island pick up the European mails from the islands formerly enumerated, and thence with the whole proceed to St. Thomas, by Tortola, 140 miles, one and a half day more; in all, fourteen days from her arrival at Barbadoes to St. Thomas.

At St. Thomas, having all the mails from the Windward and Leeward Islands on board, and having there got the European mail from Laguayra, &c., the packet will proceed, on the fourteenth day, to the westward, calling at St. John's, Porto Rico, for the return mail, and thence go on to Cape Nichola Mole, Hayti, 480 miles, three days. At this latter place receive all the European mails from the Bahamas, from Jamaica, Cuba, &c. &c., and thence, with the whole, on the seventeenth day, proceed direct, according as may be determined, to Fayal or to Falmouth, calling at Crooked Island to pick up the return mails from the Bahamas, if it shall be found that those cannot be got up in time by the sailing schooners to Cape Nichola Mole.*

THE SECOND PACKET of the month, and all the steamers and schooners, to proceed exactly in a similar manner.

According to the proposed arrangement, these steam-boats would be actively employed thus :—

	1008 days, yearly—Jamaica station	
	192 „ „	Demerara ditto.
In all	1200 days, yearly.	Coals, 30,000 tons.

* Whenever steamers are appointed to carry the mails from Falmouth to Barbadoes, the arrival of the packet at that island will be so regular, that Jamaica *might* be made (should this be considered advantageous) the headquarters, as it were, for the steamers in that quarter of the world. Four would then be sufficient for the work between Barbadoes and Vera Cruz; two to run between Jamaica and Vera Cruz, by the Havannah, and two between Jamaica and Barbadoes, by St. Thomas. The latter two would be each fifteen days at sea monthly, and the former two seventeen days, exclusive of partial stoppages;

Advantages.

I. There would, by these arrangements, be two mails each month to Great Britain from all places in the western Tropical Archipelago, or connected with it, which at present there are not.

II. Jamaica, with the requisite alterations in her internal mail communications, would have in all her western division seven and eight days, and in all her eastern division eight and nine days, to return answers by the packet with which she receives her European, &c. correspondence, of which she at present is deprived; Kingston and Spanish Town alone being able, under the present regulations, to do so.

III. Porto Rico, All Cuba, the more important parts of Hayti, and all the western coasts of South America, would, by these arrangements, be brought immediately and completely within the range of the British Post-office, most of which places at present are not.

IV. By this arrangement all British Guiana would be enabled to reply to all its European and Colonial correspondence by the same packet, but which at present they have it not in their power to do.

V. The inhabitants of Trinidad would get sufficient time to receive and to reply to their letters by the same packet. From the Naparima and other distant quarters they cannot at present do so.

so that there would be abundance of time for rest and repairs. Further, under such circumstances, the packet with the European return mails would have time to run through the islands and pick up all the mails; meeting, on the second day after her departure from Trinidad, and on the ninth after reaching Barbadoes, at St. Lucia, the steamer from Guiana, with the Guiana, Tobago, and Barbadoes return mails; and proceeding onward through all the islands, to the northward and westward, St. Thomas and Porto Rico included, pass from that island through the Mona Passage, and call at Jacmel for a mail, reaching Jamaica in fourteen days. From thence starting without delay, and going by St. Jago de Cuba and Cape Nichola, leave the latter place on the seventeenth day for Fayal, exactly in the same time that it is calculated it could do under the other arrangement. But such an arrangement would render it difficult, perhaps impracticable, to get up the Laguayra mail to St. Thomas in time, it having only ten days for that purpose; and at the same time an additional expense for coals, at least for three days each packet or voyage (1800 tons, 2250*l.* yearly) would be required, being the time taken between Jamaica and Cape Nichola Mole.

VI. The whole of the British Windward and Leeward Island Colonies would have regularly, and nearly every week, post communications with each other and with Barbadoes, instead of being, as at present, weeks together without such communications.

VII. This arrangement would be more agreeable, convenient, and advantageous to passengers from Demerara, &c. for the packet for England, and also amongst the Colonies, and consequently more advantageous to all interested in the packets.

VIII. The same may be said with regard to passengers in every part of the Western Archipelago. The frequency and regularity of the conveyances would greatly add to the number of travellers, and also greatly increase the number of letters sent and received, and consequently augment the Post-office revenue to an amount greatly beyond what it now is.

IX. By this arrangement the packet itself would always be out of any danger, which, it is well known, she incurs by laying at Barbadoes, an unsheltered place at all times, but peculiarly dangerous in the hurricane months. In the route pointed out she would be nearly free from the sphere of all such dangers and tempests.

X. By this arrangement the communications, both to the Government and to individuals, would be more safe, and regular, and frequent than they now are with every quarter of the Western World; an object of great importance to all, but more especially to the British Government.

XI. By this arrangement six Mexican packets, which cost Government, say 4200*l.* each (25,200*l.* per annum), would be wholly saved.

XII. Departing from Cape Nichola Mole, instead of St. Thomas, for Falmouth, does not increase the distance in the voyage to England above 310 miles,—about two days' sail; moreover, it may be remarked, the packet at present scarcely ever leaves St. Thomas for England earlier than on the nineteenth day, and sometimes even longer. Thus,—Steam-boat to Jamaica, eight days, four days there, and seven to St. Thomas even in favourable voyages.

XIII. Great Britain, by thus possessing all the channels of communication in the Western Archipelago, would thereby secure the principal political influence therein; but which will otherwise, and in a very short period hence, go into the hands of the United States, now

earnestly looking about and proceeding to acquire and to extend the same in that quarter of the world.

XIV. The expenses as regards this plan, would, for the West Indies, not be greater than for the present establishment in that quarter, the Mexican packets included ; while the communications with several places would be doubled.

XV. The whole correspondence of the United States, with every quarter of America, to the south of these States, would be brought by the General Plan within the range of the Post Office of Great Britain. There would, moreover, be two mails each month between Great Britain and the eastern coast of South America.

XVI. A great and useful commercial correspondence, between the United States, British North America, and all the West Indies, would be opened up, but which at present does not exist.

RECAPITULATION.

In order to obtain a view of the Plan, brought into the narrowest possible compass, without wading through the minute and multifarious details, it is necessary to particularize the different stations and departments, to which the numbers affixed immediately and only relate, thus :—

- No. 1. Falmouth to Terceira or Fayal.
2. Fayal to Halifax.
3. Halifax by New York to Havannah.
4. Fayal to Rio de Janeiro by Pernambuco, &c.
5. Fayal to Madeira and Teneriffe.
6. Fayal to Barbadoes.
7. West India Department, from Demerara to Vera Cruz, including Chagres, &c.
8. Expenses, depôts for coals, and repair boats.

Cost of Plan by Steam.

Number of Station.	Fixed Capital required.	Provisions Wages, &c. Yearly.	Tons of Coals Yearly.	Price of Coals per ton.	Cost of Coals Yearly.	Total Expenditure Yearly.	Number of Steamers.	Number of Sailing Vessels.
	£	£		s.	£	£		
1	48,000	12,400	8,400	20	8,400	20,800	2	"
2	48,000	12,400	12,000	25	15,000	27,400	2	"
3	48,000	12,400	12,000	"	15,000	27,400	2	"
4	72,000	18,600	23,400	"	29,250	47,850	3	"
5	7,000	3,600	"	"	"	3,600	"	4
6	96,000	24,800	22,200	"	27,750	52,550	4	"
7	157,500	44,400	30,000	"	37,500	81,900	6	9
8	"	"	"	"	"	11,350	"	"
*	476,500	128,600	108,000		132,900	272,850	19	13
Sub.	335,500	115,000	38,400		45,900	168,500	8	26
Diff.	141,000	13,600	69,600		87,000	104,350	11	13

N.B.—The latter sum shows the difference of capital and expenditure betwixt the work done by steam, and partly by steam and partly by sailing packets. The reduction in coals by the preceding estimate will be 33,250*l.*; and, allowing 10 per cent. wastage on the *whole quantity*, the real reduction in the expenditure will be 20,000*l.*

* The cost of these steamers will, to a considerable degree, depend on the tonnage which it is considered most proper to adopt. The utmost quantity of coals which any of them will require to carry, will be (Fayal to Barbadoes, and Fayal to Pernambuco) 300 tons. Airy accommodation for from fifty to sixty cabin passengers, and twenty-five to thirty steerage ditto, with the crew, will be all that is requisite, leaving a room for specie and the mails, and space for from forty to one hundred tons of goods. Since the present calculation was made, the price of machinery has risen considerably. Boats of the size necessary may now, perhaps, cost 28,000*l.* to 29,000*l.* In the latter case, 750*l.* per annum (five per cent. insurance, five per cent. interest, and five per cent. ordinary tear and wear) must be added to the yearly outlay, as here stated. The wages and provisions will remain the same. Iron boats can be had *one-fourth* cheaper than those built of wood; moreover, engines now made on the EXPANSIVE system, require fully one-third fewer coals, by which so much expense will be saved.

Cost, partly by Steamers and partly by Sailing Packets.

Number of Station.	Fixed Capital required.	Provisions Wages, &c. Yearly.	Tons of Coals Yearly.	Price of Coals per ton.	Cost of Coals Yearly.	Total Expenditure Yearly.	Number of Steamers.	Number of Sailing Packets.
	£	£		s.	£	£		
1	48,000	12,400	8,400	20	8,400	20,800	2	"
2	19,000	8,400	"	"	"	8,400	"	2
3	19,000	8,400	"	"	"	8,400	"	2
4	47,500	21,000	"	"	"	21,000	"	5
5	7,000	3,600	"	"	"	3,600	"	4
6	38,000	16,800	"	"	"	16,800	"	4
7	157,000	44,400	30,000	25	37,500	81,900	6	9
8	"	"	"	"	"	7,600	"	"
	335,500	115,000	38,400		45,900	168,500	8	26

Subject on the total expenditure to reduction in coals to the amount of 11,475*l.*; less, however, 10 per cent, or 4,590*l.* for wastage; giving the real reduction to be 6,885*l.*

GENERAL REMARKS.

The mails conveyed from Great Britain by steam to the quarters mentioned would in their courses be due:—

London to Halifax, Quebec, and New York, forty-six days; from Halifax to West Indies, according to the distance of the island or place; Havannah, twenty-two days; Jamaica, thirty-one days; Barbadoes, fifty days, &c. &c. London to Rio de Janeiro, sixty-five days, and Buenos Ayres, fifteen days more; London to Madeira and Teneriffe, thirty-four days; London to Barbadoes, and all the West Indies, from Demerara to Havannah, and Chagres inclusive, sixty-five days, and to Honduras, Vera Cruz, and Tampico, fifteen days more. If the mails are conveyed by sailing packets on the four great lines from Fayal, then the time for all would be fifteen days additional.

Large as the above-mentioned sums are, still the revenues of Great Britain and Ireland, and their Colonial dependencies

in the Western World (say 55,000,000*l.* yearly), ought to defray the cost without feeling any embarrassment. The cost, however, is nothing, when compared to the benefits and the advantages which the nation and individuals would derive from it. Time saved and actively employed is every thing. It is capital, which, if not employed at the moment, can never be again employed—a capital which, if suffered or forced to remain unemployed, or to escape unemployed, can never again be found or replaced. The exports of Great Britain amount at the declared value, and including freights and charges, to 75,000,000*l.* per annum. By employing steam-packets on even a portion of the present work, instead of sailing-packets, *fifteen* days would be gained in every line of communication. Remittances arriving fifteen days earlier would be a profit to the commercial interests of the country of 167,793*l.*, independent of the additional advantages which every merchant would gain when, instead of his funds wandering on the Atlantic, or lying idle and unproductive on the other side of it, he had these in hand, to lay out to good account as opportunity might offer. Even Government itself, from the want of regularity and frequency of transmission, lose, in their money transactions in the West Indies, above 8000*l.* yearly, and much more in not being able to learn quickly and regularly the state of the exchanges in the great money marts in the Western World.

Moreover, the Plan above recommended, conducted judiciously, and carried into effect to the extent pointed out, would amply repay either the Government or the individuals who may undertake it. Travelling would be prodigiously increased. Some of the wealth of foreign countries would be drawn by it to this country and her dependencies. Everywhere activity and industry would be encouraged and increased. The Post-office revenue would be greatly augmented,—perhaps doubled. The expenditure also would all be on British materials and labour.

Cost of the New System and the Present System.

In order to understand the subject fairly, it becomes necessary to contrast the capital and the expenditure required under

the New PLAN with the capital and the expenditure required for the *Present System*; and also, from data, which, though these in some points may not be perfectly accurate, are at any rate sufficiently so, to show the income which may reasonably be expected under the working of the Plan recommended. Every one practically acquainted with the subject, with the countries and combinations, with the objects alluded to and brought forward, will acknowledge the general accuracy of the data, and the great superiority and advantages in every way, and in every thing, of the new plan over the present system.

I.

The portion relating to the West Indian Department, shall separately and first be taken as a comparison.

Yearly cost by the proposed plan	£81,900
Yearly cost by present system :—	
Six Mexican packets at £4,200*	£25,200
Four steamers and coals, say	39,000
Hire ten mail-boats, West Indies	6,000
Ditto mail-vessels, Nassau, Chagres, &c., say	4,000
Assistance navy,† equal to, say	3,000
	<hr/>
	77,200
Apparent increase	£4,700
But against this there is to be placed, the proportion of saving in coals	5,635
Difference <i>gained</i>	<hr/>
	£935

* See Appendix No. 1., Calculation of Expenses of Steamers and Sailing Packets.

† Men-of-war frequently carry the mails from Barbadoes to Jamaica; also in other places.

Capital.

Capital required by new plan £157,000

By present system:—

Six Mexican packets, at £9500 . £57,000

Four steamers, above £20,000, say 86,000

Ten mail-vessels, Windward Islands,

£1500 15,000

Mail-vessels, Nassau, St. Martha, &c. 5,000

Aid men-of-war,* equal to . . 7,500

170,500

Difference: decrease . . . £13,500

Under the present system, all Demerara, Jamaica (Kingston and Spanish Town excepted), and a large portion of Trinidad, cannot reply to their letters by the same packet by which they receive them. Also Nassau, Havannah, Tampico, Vera Cruz, Honduras, Chagres, Carthagena, Santa Martha, and Laguayra, have only one mail each month; while all Porto Rico, all the north side (the most important part) of Hayti, and all the south side of Cuba, are wholly left out; while in all parts the system is imperfect, irregular, and uncertain.

By the new plan, Nassau, Havannah, Tampico, Vera Cruz, Honduras, Chagres, Santa Martha, and Laguayra, would have two mails each month; all Porto Rico, the north side of Hayti, and the south side of Cuba, would be included, and have two mails each month also; and all Jamaica, Trinidad, and Demerara, would have time to reply to their letters by the same packet which brought them. Time would everywhere be saved, and the whole system would be regular and certain, and properly combined.

* This assistance is worth more in capital than this sum.

II.

The General Plan for the Western World:—

Capital required by new plan £476,500

By present system :—

28 sailing-packets,* at £9500 . .	£266,000	
2 do. vessels, S. America, £5,000 .	10,000	
4 steamers, <i>above</i> £20,000 . . .	86,000	
10 mail-vessels, Barbadoes, £1500 .	15,000	
Mail vessels, other stations, at least	8,000	
Aid navy, as already stated . .	7,500	
		<u>392,500</u>

Difference : increase £84,000

Cost yearly by new plan £272,850

By present system :—

28 sailing-packets, at £4200 . .	£126,000	
4 steamers, and coals	39,000	
2 vessels, Rio de Janeiro, &c. . .	4,500	
10 mail vessels, Barbadoes station .	6,000	
Bermuda, Halifax, Nassau, &c. &c.		
say	5,500	
Aid navy, equal to	3,000	
		<u>184,000</u>

Apparent increase £88,850

But against this is to be placed, first, the coals saved by the use of sails, 20,000*l.*; secondly, the sum of 11,350*l.* allowed in new plan (not taken into account in the present) for the expense of coal depôts, and places for repairs; together . . . 31,350

Real increase : £57,550

* According to Parl. Pap. No. 251, of 1835, the following are the names and the number of the packets:—

Eclipse	Lyra	Tyrian	Stanmer
Plover	Renard	Seagull	Nautilus

Remarks.

By the present system, there is no direct mail communication with New York ; no communication between North America and the West Indies ; no mail communication with the north side of Hayti, the south side of Cuba, nor with Porto Rico ; Havannah, Vera Cruz, Tampico, Honduras, Nassau, Bermuda, Chagres, Carthagena, Santa Martha, Laguayra, Rio de Janeiro, Buenos Ayres, &c. &c. have only *one* mail in each month ; while all Demerara, most part of Trinidad, and all Jamaica (Kingston and Spanish Town excepted), cannot reply to their letters by the same packet by which they received them. Further, every thing is imperfect, irregular, and uncertain ; and, moreover, the four steamers in the West Indies last spring are so utterly inefficient and worthless, that they must forthwith be replaced by at least *three* good new ones, to do the same limited work.

By the new plan there will be *two mail* communications with New York and Halifax monthly ; two ditto between all the West Indies and all North America ; there will be a mail communication twice each month with Porto Rico, with the north side of Hayti, and the south side of Cuba. There will be mail communications twice each month with Bermuda, Nassau, Havannah, Tampico, Vera Cruz, Honduras, Chagres, Panama, Carthagena, Santa Martha, Laguayra, Rio de Janeiro, Buenos Ayres, Madeira, and Teneriffe ; and all Demerara, Jamaica, and Trinidad will be able to reply to their letters by the same packet by which they receive them. The work everywhere will be well done, and every thing will be regular and certain.

Swallow	Briseis	Cockatrice	Scorpion
Goldfinch	Reindeer	Hornet	Espoir
Mutine	Nightingale	Camden	Pike
Lapwing	Skylark	Duke of York	Sheldrake
Pigeon	Spey	Lady Mary Pelham	
Opossum	Pandora	Lord Melville	

Astrea, stationary ship at Falmouth, 956 tons. The Express, the Star, the Alert, NEW, have since replaced some of the above.

III.

If Steam is employed between Falmouth and Fayal, and in all the West Indian department, and supposing that all the remainder of the general plan for the western world is performed by sailing packets, then the results will be:—

Capital required by new plan this way . . .	£335,500
Ditto employed under the present system . .	392,500
Difference LESS	<u>£57,000</u>
Yearly cost by present system	£184,000
Ditto by new plan	168,500
Difference LESS	<u>£15,500</u>
But to this difference ought to be added the sum of 6885 <i>l.</i> saved in coals by using sails, and the sum of 7600 <i>l.</i> allowed in new plan but not taken into account in the present, for the expense of coal depôts, and places for repairs, 7600 <i>l.</i> together	14,485
True difference LESS	<u>£29,985</u>

IV.—*Income.*

Profit on passengers in all quarters (see Appendix, No. 1.)	£132,274
Freights, parcels, packages, fine goods (see do.)	117,440
Ditto specie, 24,000,000 dollars, at 1 per cent. dollar 4 <i>s.</i> 2 <i>d.</i>	51,125
*Transport troops, stores, &c. for Government, say	30,705
Saving coals, as before, by use of sails . . .	<u>20,000</u>
Total	<u>£351,544</u>

* Cost transport troops to Government yearly—

Jamaica command	£4,314 4 5
Windward and Leeward Islands . .	14,149 17 9
Bermuda command	3,982 18 10
British North America	6,259 13 3
Army vessels West Indies	1,998 13 10
	<u>30,705 8 1</u>

Parliamentary Papers, No. 598 of 1836.

Brought forward . . .	£351,544
Yearly charges of whole done by Steam	£252,850
*10 per cent. yearly to replace capital, or	50,000
Port charges, say foreign ports, &c. . .	15,000
Sundry small charges for Steamers, at	
600 <i>l.</i> yearly	11,400
	<u>329,250</u>
Gain besides clear post-office revenue . . .	<u>£22,294</u>

As regards the Post-office revenue, it is impossible, in the absence of full official returns, to state its present exact amount, and, consequently, the probable future increase. The revenue from the outward postages to the British West Indian Colonies, Honduras excepted, is inserted in the Appendix from official authority. Judging from it, and other data, also adduced from official authority, the present amount there stated cannot be far wrong; and the calculated increase under the arrangements proposed, every circumstance considered, is fair and reasonable. Besides the certain great increase in all the external postages in these countries and colonies and places, the internal and coasting postages in these places will be augmented to a very great extent. Taking the outward postages at present to be, to all the places mentioned, 100,000*l.*—inwards as

* In order to replace the original capital, 10 per cent. or 50,000*l.* yearly laid aside as a sinking fund, is quite sufficient, thus :—

	Principal.	Interest.
1st year . . .	£50,000 0 0	
2d do. . .	50,000 0 0	£2,500 0 0
3d do. . .	50,000 0 0	5,125 0 0
4th do. . .	50,000 0 0	7,881 5 0
5th do. . .	50,000 0 0	10,775 6 0
6th do. . .	50,000 0 0	13,814 0 6
7th do. . .	50,000 0 0	17,004 19 0
8th do. . .	50,000 0 0	20,335 0 6
9th do. . .	50,000 0 0	23,872 15 6
10th do. . .	50,000 0 0	27,566 8 7
Capital . . .	500,000 0 0	128,888 14 9
Interest . . .	128,888 14 9	
Total . . .	<u>£628,888 14 9</u>	

A similar sum (see Appendix, No. 1.) of at least 600*l.* per annum, each, ought to be charged as the capital necessary to replace the sailing packets.

much, 200,000*l.*—there may be added, Additions 100,000*l.*; Increase 70,000*l.*; total 370,000*l.*; viz., outwards 185,000*l.*, and inwards as much; giving at the average postage of 2*s.* 5*d.* the number of letters each way to be 1,531,465.

As regards the Harbour-charges, in the British Colonies, these may be given up, or reduced to a small sum for the trouble which the Custom Houses may be put to; and in foreign ports it should be arranged by compacts with the respective governments, that the port dues should be reduced to a small sum, for two reasons,—because the vessels carry the mails, and because they are on that account restricted to a small portion of the whole cargo, which they could otherwise take. The charges might be made proportionate: there could not be much difficulty in arranging these points. In some of the minor ports (foreign), the steamers would not even come to anchor.

WEST INDIES.—INTERNAL POST OFFICES.

The internal communications in the West Indies by post are very inefficient, even where they exist, but in most colonies these are altogether wanting.

Communication in the West Indies on business, and in the affairs of public and private life, is principally carried on by correspondence; and from the particular circumstances of these colonies, more so in proportion than in other countries.

The way in which this extensive and general communication is carried on is by letter sent by servants or hired messengers. These servants or messengers take days in a particular service, according to the distance. The latter mode is particularly expensive. The other, the most general, is scarcely less so, except that from the construction of West Indian society, there was beforetime felt no immediate outlay for the service required.

Important supplies are required upon an estate for various purposes. This is of very frequent occurrence. A special messenger from that estate must be despatched with a letter

ordering the same, to a distance of twenty or thirty miles, or more. Two or three days' labour are lost, an expense of 4*s.* or 5*s.* incurred, while 1*s.* for letters by post, if there was a post, would accomplish the object. This is merely one point brought forward in proof of the necessity of internal post conveyances in the British West Indian colonies, as in this country, out of the multitudes that could be adduced for a similar purpose.

The state of society in the West Indies is now on the eve of being completely changed, and assimilated to the society in this country; and consequently the duty of the Government of this country ought to bestow on the population of the colonies the same facilities of communication which the population of the mother country enjoy.

When the Negro apprenticeship comes to an end, either partially or totally, the expense to estates and individuals for servants or messengers to carry the correspondence absolutely necessary, will be exceedingly great, and a most serious burden; and yet it must be borne,—or otherwise, without internal post communications, neither cultivation nor commerce can be carried on.

It is absolutely necessary for the future well-being of these colonies, that internal post communications should be extended to, and established in each of them.

Jamaica (and perhaps it stands single in this respect) has an internal post communication once a week, to and from Kingston, and other quarters of the island (daily only with Spanish Town, the capital); still this weekly post is greatly inadequate to its present wants, and will be much more so after August 1838, and August 1840. In consequence of this restricted communication, no other part of the island, Spanish Town excepted, knows of a packet's arrival until it is gone, or till it is too late to write by it. This important colony ought not only to have mails from Kingston at least three times a week, but the various post-offices throughout the island should have auxiliary post-offices, after the manner of penny or twopenny post-offices in this country. Every one will be glad to pay a regular and reasonable postage, rather than be at the very heavy expense, after 1840, of taking a labourer to convey the com-

munications. Knowing the stated day for receiving and transmitting letters, no one in the most distant parts could ever be at a loss; and every one, more especially on estates, would benefit and save exceedingly thereby.

In like manner, the smaller colonies ought to have posts twice or thrice a week from the capital; the country offices placed at the most important villages, and the auxiliary ones at hamlets the best situated for the purpose. Smaller merchants and shopkeepers in these places would be glad to do the duty at a moderate rate, because it would otherwise serve them, by drawing customers and correspondents to their places of business.

Even in the smallest colonies such internal establishments would pay, and, in most of them, more than pay, the expenses they occasion; while it is clear that such internal facilities would most materially add to the external or packet postage.

Where the roads are good, the mails, travelling at the rate of five or six miles per hour, may be carried in gigs, as in this country, drawn by horses or mules; and where rugged or hilly, on the backs of mules, in proper portmanteaus.

It is worthy the attention, and is in fact the duty, of Her Majesty's General Post-office, to direct some person locally acquainted to proceed through the colonies, to examine into situations, and to establish such internal post conveyances. In the smaller islands, as has been stated, they would defray, and more than defray, the expenses incurred; while in the larger and more opulent colonies, they would yield a fair revenue; while the good they would do to every community will be incalculably great. The West Indies everywhere want a little European energy and regularity infused into them,—and this is one efficient, perhaps the simplest and most efficient way to do it.

PACIFIC DEPARTMENT.

It has been already stated that a steam communication for the west coasts of America, on the Pacific, has already been arranged, and is about to be set on foot. This important object has been concerted and arranged by that enterprising gentleman, WILLIAM WHEELWRIGHT, Esq., of Valparaiso, after almost incredible perseverance and labour, and great expense; and has obtained the official sanction and support of both the Chilian and Peruvian Governments. It will extend from Panama to Valparaiso on the south, and to Acapulco on the north; and will, as a matter of course, for the interest of those concerned in carrying the plan into execution, be so timed and arranged in the working machinery thereof, as to correspond with the arrivals at, and departures from, Chagres on the north, or the Atlantic side of the Isthmus.* A road is

• The following are the distances from Panama to the different places alluded to :—

SOUTH.

Panama to Guayaquil . . .	S. 0°. 31' W.	Dist. 670 Geo. Miles.
Guayaquil to Lima . . .	S. 15°. E.	„ 610
Lima to Arica . . .	S. 45°. E.	„ 570
Arica to Coquimbo . . .	S. 5°. W.	„ 690
Coquimbo to Valparaiso . .	S. 5°. W.	„ 190
Valparaiso to Fort Carlos, Chiloe	S. 16°. W.	„ 555

From Panama to Valparaiso and back could be thirty days, including three days for stoppages.

NORTH.

Panama to Point Mala . . .	S. 15°. W.	Dist. 95 Geo. Miles.
Point Mala to Port Damas, Quibo	S. 89°. W.	„ 97
Port Damas to Rialejo . . .	N. 48°. W.	„ 450

Rialejo

about to be commenced between Panama and the Chagres, which when completed, the communication from sea to sea may be made in half a day. This point, as regards the western coasts of America, being thus arranged, it becomes of vast importance to the whole plan proposed, to extend from Great Britain to the eastern coasts of the western world; and it now becomes of great consequence to show how readily and advantageously the West Indian department can be made to connect itself outwards and inwards across the Isthmus alluded to, with Sydney, New South Wales; Canton, China, &c.

This connexion may be made either by Chagres and Panama, or by the river St. Juan's, through the Lake Nicaragua, to Rialejo, on the Pacific. The distances and courses by either are not materially different: but there is the best reason to believe that the communication by the route last mentioned is the best; and that, in fact, it may, without a very great expense, be effected by water. To carry on the communication across the Pacific, from and to the places mentioned, by steam, would be unprofitable, unadvisable, and unnecessary. To give two mails each month to the places specifically mentioned, would require, even fixing a central point in the Pacific as in the Atlantic, thirteen steamers, at a cost of 223,000*l.*; while no more than fifteen days could be gained, compared to the time that the work could be performed by sailing packets. These results have been obtained after calculations carefully made upon the same principles as the calculations for a similar purpose have been made in the preceding pages. The whole can be proved by considering the winds which prevail in the quarters of the Pacific alluded to (elsewhere particularly noticed), and by examining the bearings and distances inserted in Appendix No. III. These matters being considered, it follows, that not only no additional expense will be required on account of the mails which are to cross the Isthmus to the

Rialejo to Acapulco	N. 62½° W. Dist. 1180 Geo. Miles.
Acapulco to St. Blas	N. 48° W. „ 420
St. Blas to Cape Lucas, California	N. 73° W. „ 274

From Panama to St. Blas and back could be twenty-seven days, including four days for stoppages.

Pacific, until their arrival at Panama or Rialejo; but that resources from the latter, such as parcels, packages, and passengers, will be drawn from the Pacific department, to increase the returns in the Atlantic department. With these observations, it is now proper to advert to the courses and distances which must be taken, and the expenses which will be required in this, which shall be denominated the Pacific Department; the work to be performed by first-class sailing packets.

Owing to the winds which prevail in the Pacific, the passage outwards to both Sydney and Canton would be easy and rapid; but in order to make the return mails from these places meet at a central point—thereby, as in the plan for crossing the Atlantic, to save packets—which point should be so placed, as that taking it in would not retard the progress of the mails, or that only in the slightest degree possible—is now the point to consider. Beyond the parallel where the variable winds commence, there is no island of importance in any position that would be an eligible and safe point for the return mails from Sydney and Canton to meet in their way to Rialejo or Panama. To carry the outward mails from either of the latter places by Otaheite, the Canton packet branching off there would be to bring it, upon its return, a vast distance out of its way (to Otaheite it must return in order to get the next outward mail for Canton); especially when the return mail from Sydney must stand north through the trades to get into the northern variables. It would be desirable that a good point should be found, as much to the westward as possible, and convenient to proceed to Canton; at the same time, sufficiently to the eastward, or, as it may be called, to the windward, of New South Wales. Owhyhee may be considered as taking the Sydney outward mails considerably out of their course, although by making that the point, the time in both lines westward from it would be pretty equally divided. The difference, however, and the delay it would occasion, would not be so much as at first sight may be imagined; while the short distance that this island is within the northern trade winds, would render it neither difficult nor tedious for the return packet from Canton to run down upon it, and there meet the return packet from

Sydney. Christmas Isle, a little to the north of the equator, might be made the central point at which the packets would separate, and to which they would return; the Canton packets dropping at Owhyhee the return mails, to be picked up by the packet returning from Sydney to Rialejo. This would bring the Canton packet 1000 miles into the trade winds to Christmas Isle. From thence, with the outward mails, it could run rapidly westward to Canton, calling at Manila in the voyage. There are no other places in the North Pacific where packets could touch, unite, and command, with the least inconvenience to the service, the navigation to and from both places. Separate establishments for each line from the west coast of America may be considered too expensive, if, by concentration and combination, the same work could be performed at less expense; and then, by that combination, whatever letters, passengers, &c. there might be from Sydney to Canton, or from Canton to Sydney, would meet at either of the places mentioned, and be forwarded in the quickest manner to their respective destinations. The question is, Which of the places and plans mentioned is the best fitted for the objects had in view? To determine this, it will be best to consider the communication, each of the three ways in which it may be taken, thus:—

Making Owhyhee the central point of communication, the routes, distances, and periods, and expenses, would be—

	Geo. Miles.	Days.
Rialejo to Owhyhee	4,100	22
Owhyhee to Canton	5,200	28
Stop at Canton	„	2
Canton to Owhyhee (circuitous)	5,900	39
Owhyhee to Rialejo do.	4,700	29
Totals	<u>19,900</u>	<u>120</u>

Eight boats would perform this work, giving two mails each month: cost, 76,000%. ; yearly charges, 33,600%.

Owhyhee to Sydney.

	Geo. Miles.	Days.
Owhyhee to Sydney, N. S. Wales	4,600	24
Stop at Sydney	„	3
Sydney to Otaheite, say	3,900	25
Otaheite to Owhyhee	2,250	13
Totals	<u>10,750</u>	<u>65</u>

Six packets (one to spare) would perform this work between Owhyhee and Sydney, giving two mails each month: cost, 57,000*l.*; yearly charges, 25,200*l.* Admitting that the packets on the Owhyhee and Sydney line take longer time than is here stated, they would still be in time to reach Owhyhee by the time that the Canton mail came up; which in its course with Owhyhee is calculated to be 91 days. In fact, there is thus time sufficient to allow the Owhyhee and Sydney packet time to communicate with Hobart Town, and to call at Otaheite in her outward voyage; as she will do, and, in fact, from the course which she must take, she may and can do, in her return voyage, without any inconvenience or delay whatever.

The next plan is, to consider the communications alluded to as to be carried on by making Christmas Island the central point of arrangement; thus:—

Rialejo to Christmas Isle.

	Geo. Miles.	Days.
Rialejo to Christmas Isle	4000	21
Christmas Isle to Sydney, N. S. Wales	3650	20
Stop at Sydney	„	3
Sydney to Christmas Isle, by Otaheite	5100	35
Christmas Isle to Rialejo, by Owhyhee	5800	35
Totals	<u>15,500</u>	<u>114</u>

Eight packets would perform this work, giving two mails each month: cost, 76,000*l.*; yearly charges, 33,600*l.*

Christmas Isle to Canton.

	Geo. Miles.	Days.
Christmas Isle to Canton	5250	26
Stop at Canton	„	3
Canton to Christmas Isle, by Owhyhee route	6900	46
Totals	<u>12,150</u>	<u>75</u>

Eight packets would perform this work, giving two mails each month: cost 76,000*l.*; yearly charges, 33,600*l.*; which shows that it takes one packet more by this arrangement than would be required by the other.

Keeping the stations altogether separate, the following would be the periods and number of packets required, premising that the packets would return to the point of departure on the west coast of America, nearly in the dotted lines which are laid down on the accompanying Chart:—

Rialejo to Canton.

	Geo. Miles.	Days.
Rialejo to Owhyhee	4100	22
Owhyhee to Canton	5200	27
Stop at Canton	„	2
Canton to Rialejo (circuitous)	10,000	59
Totals	<u>19,800</u>	<u>110</u>

Eight packets would perform this work, giving two mails each month; first cost, 76,000*l.*; yearly charges, 33,600*l.*

Rialejo to Sydney, New South Wales.

	Geo. Miles.	Days.
Rialejo to Otaheite	4100	22
Otaheite to Sydney	3400	19
Stop at Sydney	„	3
Sydney to Rialejo, by N. Point, New Zealand	8500	51
Totals	<u>16,000</u>	<u>95</u>

Examining attentively the three preceding routes of communication, it is plain that, in point of expense, the last, namely, that which gives two establishments, is not more than the most eligible of the other two, while in point of time it is considerably the quickest. The packets going out and returning twice each month, or every *fifteen* days, it follows that, on every route, their voyages divide into periods of that duration. In the more distant, such as the routes at present under consideration, their voyages, in order to coincide and to meet with the return mails at any given point, will run, say, 90 days, 105 days, 120 days, &c. ; and within the latter-mentioned number the mail from Canton must return to Jamaica, to secure, without extra loss of time, a packet bound to England.

Seven packets would perform this work, giving two mails each month ; first cost, 66,500*l.* ; yearly charges, 29,200*l.* ; which is one packet more than the Owhyhee plan requires ; but that station would require one spare packet, making *fifteen* for the whole, which thus makes both stations equal, but without the combination which the Owhyhee station gives.

This arrangement for the Pacific would, in whichever way it may be taken, save the whole proposed steam communication from Ceylon eastward to Canton and New South Wales ; which saving, either on the Mediterranean or Cape of Good Hope lines, would be, eight steamers and one sailing vessel—capital, 199,500*l.*, and yearly charges about 130,000*l.* ; thus reducing very greatly indeed the cost of the subsequent plan projected for the Eastern world. Even at the outset, the mails, parcels, and passengers on the Pacific station, would, it is believed, pay the expenses as here stated :—

	Fixed Capital.	Yearly Charges.
Pacific Departments	£142,500	£63,000

THE MEDITERRANEAN, EAST INDIES,

&c. &c.

I. *Falmouth and the Mediterranean.*

To extend the mail communications between Great Britain and all places in the Mediterranean, and more especially with the more distant parts of that sea, which will go to connect more closely British communications with the East Indies and countries situated still more to the eastward, is now, more than ever, become a national object, and, it may be added, a national duty. France seems to be actively extending mail communications, in that sea, to all places, as well to those under her immediate sway as to others; and if allowed to do so without any rival, it becomes obvious that, with the command of all the channels of communication, she will obtain such a monopoly of political influence as will give her the monopoly of political power also in that quarter of the world. Such a result cannot fail to prove highly injurious to all the great commercial and political interests of Great Britain; and this result ought to be guarded against and prevented even at a considerable sacrifice, if a sacrifice were necessary, but which it is not.

Two mails each month between Great Britain and the Mediterranean are indispensably necessary, otherwise the conveyance of both letters and despatches, and passengers, will generally be quicker by private ships and other similar conveyances which may offer. The route can be from Falmouth to Alexandria direct, by Lisbon, Cadiz, Gibraltar, Palermo, and Malta; at the latter place dropping the outward mails for the Ionian Islands, Athens, and Constantinople; to be forwarded immediately by a branch steam-boat, which will return

to Malta from Constantinople, &c. with the return mails for England, &c. &c. to be forwarded by the Alexandria and Falmouth steamers, returning by way of Malta, Palermo, Gibraltar, Cadiz, and Lisbon; a good sailing vessel being employed to convey the outward and the inward mails to and from Zante to the other Ionian Islands. It would take the Constantinople steamer from Malta too much out of her way to call at any other of these islands but the one mentioned.

As the Falmouth and Mediterranean department is in every point of view a most important station, so it may be rendered a profitable one; because it will connect itself with the East Indian communication, and consequently a very great additional number of passengers, letters, parcels, &c. will be obtained. Calling at Lisbon, Cadiz, Gibraltar, Palermo, and Malta in the way out to, and in the way home from Alexandria, steam-boats sufficiently powerful (240-horse power) would complete the voyage in 45 days from London to London, including all necessary stoppages.

Three powerful steamers would do this work, giving two mails each month. The capital necessary to purchase these would be 72,000*l*. The annual expenditure for these three boats, on this station, would be—Wages, provisions, tear and wear, &c. 6,200*l*. each, or 18,600*l*.; and for coals, 20,400 tons, 25,600*l*.; together, 44,200*l*. Thus each boat on this station would be actively employed 34 days each voyage=74 monthly, 816 yearly: coals, 25 tons daily=20,400 tons at 25*s*., 25,600*l*.

The route, course, and time, from Alexandria, would be thus:—

	Geo. Miles.	Days.
Falmouth to Alexandria, by Lisbon, &c. &c. .	2985	19
Alexandria to Falmouth, by Malta, &c. &c. .	2985	19
Stop at Alexandria		2
London and Falmouth, including day of departure	552	5
	<hr/> 6522	<hr/> 45
	<hr/>	<hr/>

N.B. Seventeen days, at 180 geographical miles per day, gives 3060 miles—the real distance is 2985.

2. Malta and Constantinople.

From Malta a branch steam-boat may proceed with the mails for the Ionian Islands, and touching at Zante to land these, proceed thence to Athens, and thence to Constantinople with the outward mails. From Constantinople this boat will return, by Athens and Zante, to Malta, with the return mails for the Alexandria and Falmouth packets. The distance from Malta to Alexandria and back is 1650 miles, and by the course already pointed out, the distance from Malta to Constantinople and back is not materially different. Consequently, one good steamer would perform the work in the same time as is requisite to go to Alexandria and return. This boat would be, each voyage, ten days at sea; stopping two days at Constantinople: which is 20 days monthly; 240 days yearly; requiring 5000 tons of coals, 6250*l.*, and 6200*l.* more for wages, provisions, insurance, tear and wear; together 12,450*l.* per annum.

EAST-INDIAN DEPARTMENT.

3. Alexandria and Suez.

The distance from the former to the latter place is 170 geographical miles. This might, under prompt and proper regulations, be performed in two days. The first portion of the distance is from Alexandria to Cairo, about 100 miles by water, and the second is from Cairo to Suez across the desert, about 70 miles. What the expense of transporting mails, passengers, &c. over this distance would be, it is difficult to state, but let it be taken as an approximation at 5000*l.* per annum.

4. *Suez to Bombay.*

The mail communications by steam might readily and with great advantage be extended to this quarter of the world, and to this important portion of the British empire. Nor need the channel of communication stop at the East Indies, but proceed on until it includes within its range Batavia, China, and New South Wales. The further the line is extended, and the more its ramifications are combined and connected, the greater will the advantages, and the more ample the remuneration, be to whoever undertakes the work. The commercial and political concerns and interests connected with these vast portions of the globe, are well known to be immense, and of the first-rate importance, while no European power is so much interested in these as Great Britain. With these remarks the manner in which the communications alluded to can be effected and carried on remains to be pointed out. The route, periods, and distances from Alexandria, would be as follows, premising that the price of coals in all these Eastern stations will be considerably higher than in the stations in the Western World, as these coals may have to be carried to the different places by the circuitous navigation of the Cape of Good Hope. Still, calculating the whole to be brought from Europe, these may be obtained at the average price of 40s. per ton; while 10 per cent. additional, for all supplies and wages, may be added to the sum taken for expenditure in the stations in the western hemisphere, as required in every place to the eastward of the Cape of Good Hope. And at these rates all the subsequent estimates are formed.

	Geo. Miles.	Days.
Alexandria to Suez, by Cairo	170	2
Suez to Babelmandel, by Mocha	1205	6
Stop at Mocha, coals		2
Babelmandel to Bombay, by Aden or Socotora	1630	8
Stop at Bombay		2
Bombay to Alexandria, same route	3005	18
Totals	6010	38

Three powerful steamers would perform this work, giving two mails each month—at sea 42 days each voyage = 48 monthly = 1008 yearly; coals at 25 tons daily, 25,200 tons, at 40s. 50,400l.

5. *Aden or Socotora to Mauritius.*

The steamer for Bombay could, without material difficulty, drop mails for the Mauritius at Socotora. To do so at Aden, on the Arabian coast, would add to the distance 500 miles, which is a material objection. From Socotora to the Mauritius is 1850 geographical miles. Two good sailing vessels (brigantine class) would be sufficient for the work of carrying the Mauritius mails between Socotora and that island. The time each way may be fairly taken at 15 days, and two days to stop at Port Louis, gives 32 days for the voyage. The cost of these vessels should be about 4000l. each, and their expenditure, say, 2000l. each, or 4000l. per annum. The time from London to the Mauritius by this route would be 48 days, and the same time to return, making the mail communication between the two places 105 days.

6. *Bombay to Calcutta, by Ceylon.*

One steam-boat would carry all the mails for the East Indies, &c. from Suez to Bombay; and from thence another steam-boat would proceed to Calcutta by Trincomalee, calling at Mangalore, and other places in the west coast of Hindostan, and dropping at Trincomalee the mails for all places more to the eastward. Going by Bombay, instead of going direct from Babelmandel to Ceylon, only increases the distance about 270 miles, while the vast expense of having additional and separate boats is saved. From Trincomalee, the steamer, both in going to and returning from Calcutta, could, without inconvenience or delay, call at Pondicherry and Madras. Should the time occupied by the steamers from Bombay to Calcutta by this route exceed the time occupied by the post to travel from the former to the latter by land, then in that case the European

mails from Calcutta could be forwarded by land, while the passengers, parcels, &c. could go round by the steamer, the difference, in point of time, being not above a day or two at most.

The route, time, and distance from Bombay to Calcutta, would be thus :—

	Geo. miles.	Days.
Bombay to Trincomalee	1258	7
Stop at Trincomalee		2
Trincomalee to Calcutta, by Madras, &c.	1010	5
Stop at Calcutta		2
Calcutta to Bombay, same route	2268	12
Totals	4536	28

Two powerful boats would perform this work, giving two mails each month. Each would be at sea 24 days each voyage = 48 monthly = 576 yearly: 25 tons coals daily = 14,400 tons yearly, 28,800*l*. Cost of boats, 48,000*l*.; yearly expenses, 6820*l*. each, 13,640*l*.; together with coals, 42,440*l*.

7 & 8. *Trincomalee to Canton, by Batavia.*

At Trincomalee, a steamer would take up the mails for the remainder of the Eastern World, both from Europe and from India, and proceed by Batavia to Canton. At Batavia, this boat would deposit the mails for New South Wales and Singapore; the former to be forwarded by other steamers, and the latter by a good sailing schooner, which could always accomplish her work so as to be in time for the return steamer, and for the next outward mails; the distance from Batavia to Singapore being 475 miles, thus:

Three, or even four days, out; three to stop, and four back; together 11 days. The nearest way to Canton from Trincomalee is by Nicobar and Singapore, distance, 2880 miles; whereas the distance by Batavia is 3535 miles; but then it must be remembered, that Batavia is the most important station, and 475 miles nearer New South Wales than Singapore.

Hence Batavia appears to be the most eligible point of communication for the steamers.

From Trincomalee to Canton, the route and time will be thus:—

	Geo. miles.	Days.
Trincomalee to Batavia, by Straits of Sunda	1750	9
Stop at Batavia, coals, &c.		2
Batavia to Canton	1830	9
Stop at Canton 2, Batavia 2		4
Canton to Trincomalee, by Batavia	3580	18
Totals	7160	42

Three boats would perform this work, giving two mails each month. Each boat would be at sea 36 days each voyage = 72 monthly = 864 yearly: 25 tons coals daily, 21,600 tons yearly —43,200*l*. At Trincomalee, a spare boat would require to be stationed, in case of accidents, which would make four for the station; prime cost, 96,000*l*., and one sailing-vessel, 2,000*l*. The yearly charges for provisions, wages, &c. &c. will be 6820*l*. each, and 1000*l*. for the sailing-vessel is 28,280*l*., which, together with the expense of coals, amount to 71,480*l*.

9. *Batavia to Sydney, New South Wales, by Swan River.*

At Batavia, steamers could take up the European, the Indian, and the Chinese mails, and proceed on to Sydney, New South Wales, by Swan River and Hobart Town, &c. thus:

	Geo. miles.	Days.
Batavia to Swan River	1745	9
Stop at ditto, coals		2
Swan River to Hobart Town	1770	9
Stop at ditto		1
Hobart Town to Sydney	570	3
Stop at Sydney, coals, &c.		3
Ditto at Hobart Town and Swan River, returning		3
Sydney, by Hobart Town, &c. to Batavia	4085	21
Totals	8170	51

Three boats would perform this work, giving two mails each month; but in case of accidents, there would require to be one spare boat on the station, to be stationed either at Batavia or Sydney. The cost of the four would be 96,000*l*. Each boat actively employed would be at sea 42 days each voyage = 84 monthly = 1008 yearly: 25 tons coals daily is 25,200 tons yearly, at 40*s*., 50,400*l*. The yearly expenditure of each boat besides would be 6820*l*.; for four, 27,280*l*., together with coals, 77,680*l*.

It is unnecessary to dwell on the immense advantages which such a plan of mail communications as this would give to the commercial world in general, and to the commercial interests of the United Kingdom in particular. These would be incalculably great, both to the governments and to the people. To complete the scheme, it would be requisite to have more than one station at which boats and machinery could be repaired. These would require to be Malta, in the Mediterranean, Bombay, Trincomalee, Batavia, and Sydney, in all five places; the salaries, &c. for superintendents, rents, and rent coal depôts, could not be less than 2000*l*. per annum at each, or 10,000*l*. The expense for workmen and materials are included in the 5 per cent. allowed for tear and wear in the annual expenditure for each boat.

The yearly expenditure for the whole Plan, in all its parts, would consequently be as follows, and under the respective heads as here enumerated.

Abstract.

- No. 1. Falmouth to Alexandria, by Lisbon, &c.
2. Malta to Constantinople, by Zante, &c.
3. Alexandria to Suez, by Cairo.
4. Suez to Bombay, by Mocha.
5. Socotora to Mauritius.
6. Bombay to Calcutta, by Ceylon.
- 7 & 8. Trincomalee to Canton, by Batavia, &c.
9. Batavia to Sydney, New South Wales, by Swan River, &c.
10. Coal depôts, and stations for repairs.

Expenditure by Steam Power, &c.

Number of Station.	Fixed Capital required.	Provisions, Wages, &c. Yearly.	Tons of Coals Yearly.	Price Coals per ton.	Cost of Coals Yearly.	Total Expenditure Yearly.	Number of Steamers	Number of Sailing Vessels.
	£	£		„	£	£		
1	72,000	18,600	20,400	25	25,600	44,200	3	„
2	24,000	6,200	5,000	„	6,250	12,450	1	„
3	„	5,000	„	„	„	5,000	„	„
4	72,000	20,460	25,200	40	50,400	70,860	3	„
5	8,000	4,000	„	„	„	4,000	„	2
6	48,000	13,640	14,400	„	28,800	42,240	2	„
7 & 8	98,000	28,280	21,600	„	43,200	71,480	4	1
9	96,000	27,280	25,200	„	50,400	77,680	4	„
10	„	10,000	„	„	„	10,000	„	„
	418,000	133,460	111,800		204,650	337,910	17	3
					68,000	68,000		
	418,000	133,460	111,800		136,650	269,910	17	3

The return boat from Alexandria ought not to leave that place until the Eastern mails come up from Suez.

The course of post under this arrangement between London and Alexandria, would be 45 days ; between London and Constantinople, the same ; between London and Bombay, 90 days ; London and Calcutta, 120 days ; London and Canton, 150 days ; London and Batavia, 120 days ; London and Swan River, 150 days ; London and Sydney, New South Wales, 180 days, &c. &c.

II.

ANOTHER PLAN, BY WAY OF THE CAPE OF GOOD HOPE.

The above Plan is attended with considerable risk, inas-
much as convulsions in Egypt, and on the shores of the Red
Sea about Suez and Mocha, and war in the Mediterranean,

might cut off altogether the communications with the whole Eastern World, according to the route which has been laid down. To prevent such a result is an object of great importance, providing it can be effected without a serious sacrifice as to time, or expenditure of money. To have such vitally important communications as free from being disturbed by the march of war as possible, is not only desirable, but indispensable, on the part of Great Britain. This may be effected by going out by the Cape of Good Hope.

Adopting this route would connect all the Eastern transmarine possessions of Great Britain in one chain, with scarcely a link in the line of communication being dependent upon foreigners, except one or two, which the naval power of Great Britain could always command and control in case of emergency. The course here alluded to would lengthen the course of post to Bombay and Calcutta, &c. to a considerable extent; but in every part of the proposed new line, coals could always be procured more cheap and readily than in any quarter near the Red Sea. The following details, however, will place the time and expense in a clear point of view, and enable any one to contrast at a glance the two routes, and the difference which in time and expenditure will exist and remain between them.

1. *Falmouth to Cape Verde.*

The steam-boat with all the Indian mails would go from Falmouth by Madeira to Cape Verde, thus:—

	Geo. Miles.	Days.
Falmouth to Madeira	1170	6
Stop at Madeira, coals		1
Madeira to Cape Verde	1130	6
Stop at Cape Verde, coals		2
Cape Verde to Falmouth	2300	12
Stop at Madeira, returning, coals . . .		1
	<hr/>	<hr/>
Totals .	4600	28
	<hr/>	<hr/>

Two steam-boats, actively employed, would perform this work, giving two mails each month. Each boat would be at sea 24 days each voyage = 48 monthly = 576 yearly:— coals, at 25 tons daily = 14,400 tons yearly, at 20s. 14,400l.

2. *Cape Verde to the Cape of Good Hope.*

The route and time from Cape Verde to the Cape of Good Hope will be—

	Geo. Miles.	Days.
Cape Verde to Ascension	1530	8
Ascension to St. Helena	655	3
St. Helena to Cape of Good Hope . . .	1720	9
Stop at Ascension and St. Helena twice		4
Cape of Good Hope to Cape Verde . . .	3905	20
	<hr/> 7810	<hr/> 44

Three boats, actively employed, would perform this work, giving two mails each month; but in case of accidents, it would be advisable to have one spare boat at St. Helena, or Cape Verde, making four at this station, or six in all between Falmouth and the Cape of Good Hope. The three boats actively employed would be at sea 40 days each voyage = 80 monthly = 960 yearly. Coals at 25 tons daily = 24,000 tons yearly, at 25s., 30,000l.

3. *Cape of Good Hope to the Mauritius.*

From the Cape, the steamers will proceed with all the mails to the eastward, calling at Algoa Bay and Bourbon, and next to the Mauritius. From the Mauritius it will proceed to Point de Galle, where it will deposit the mails for Bombay, and afterwards proceed to Trincomalee, from whence it will return by way of Point de Galle to the Mauritius, with the return mails for Europe. It would take the Bombay mails unreasonably out of the way to proceed from the Mauritius

direct to Trincomalee. The route, time, and distance for this boat, would be as under :—

	Geo. Miles.	Days.
Cape of Good Hope to Mauritius . . .	2280	12
Stop at Mauritius		2
Mauritius to Cape of Good Hope . . .	2280	12
Totals	4560	26

Two boats would perform this service, giving two mails each month; each 24 days at sea each voyage=48 monthly=576 yearly. Coals, 25 tons daily, 14,300 tons yearly, at 40s. 28,600l.; other charges, 13,640l. yearly; cost boats, 48,000l.

4. *Mauritius, to Point de Galle and Trincomalee, Ceylon.*

	Geo. Miles.	Days.
Mauritius to Point de Galle	2080	11
Point de Galle to Trincomalee	280	1½
Trincomalee to Mauritius, same route . . .	2360	12½
Totals	4720	25

Two steam-boats, actively employed, would perform this work, giving two mails each month; but in the event of accidents, there would require to be a spare boat on this station, either at Trincomalee or Point de Galle, as may seem advisable, and as assistance may be required for the Mauritius, Bombay, &c. line. The two boats actively engaged would be at sea each on each voyage, 27 days=54 monthly=648 yearly. Coals daily, 25 tons=16,200 tons yearly, at 40s., 32,400l. Three boats yearly, other expenses, 20,640l. This station will require three boats; and one for the Calcutta station—together four.*

* By making the four steamers on the route between the Cape of Good Hope and Ceylon, run—two from the Cape to Mauritius, and two from Mauritius to Point de Galle, the boats on the eastern side of the Mauritius would regularly have eight days, and those on the western side six days each month to rest; and furthermore, be always prepared to start whenever a steamer from either quarter with mails came up. In a similar manner, the boats which are to run between Falmouth and the Cape of Good Hope could be divided; by which means,

5. *Point de Galle to Bombay.*

A steamer would proceed from Point de Galle to Bombay, calling at Mangalore, &c. and returning to Point de Galle by the same route with all the return mails. The route and time would be—

	Geo. Miles.	Days.
Point de Galle to Bombay, by Mangalore .	880	4½
Stop at Bombay, &c.		3
Bombay to Point de Galle	880	4½
Totals	1760	12

One boat would do all this work, giving two mails each month. At sea each voyage 8 days = 16 monthly = 192 yearly. Coals 25 tons daily = 4,800 tons yearly, at 40s., 9,600*l.* Other charges, 6,820*l.*—together 16,400*l.*

6. *Trincomalee to Calcutta.*

A steamer would proceed from Trincomalee to Calcutta and back, calling in going and returning at Pondicherry and Madras. The route and time would be thus:—

	Geo. Miles.	Days.
Trincomalee to Madras	300	1½
Madras to Calcutta	735	3½
Stop at Calcutta, Coals, &c.	„	2
Calcutta to Trincomalee, same route . .	1035	5
Totals	2070	12

besides being always ready when wanted, they also would have more time to rest. Two may run from Falmouth to Cape Verde, 2300 miles; three from Cape Verde to the Cape of Good Hope, 3850 miles; with one, the fourth, to take by turns a voyage from Cape Verde to the Cape of Good Hope, and a voyage from Cape Verde to Falmouth, in order to relieve the others. Sufficient time for rest would thus be obtained. Moreover, by combining the East Indian Department with the Plan for the Western World by Fayal to Pernambuco, three steamers would be saved. The Indian steamers to branch off at the latter place for the Cape. The distance would, in this way, be increased about 1000 miles; but considering the winds and currents in the course which these steamers would take, it would not make three days more, if so much, in the outward voyage, and in the homeward voyage probably not so much; while the advantages would be considerable, and the saving great.

One steam-boat would perform this work, giving two mails each month; at sea each voyage 12 days * = 24 monthly = 288 yearly. Coals, 25 tons daily = 7200 tons yearly, at 40s., 14,400*l*. Other charges, 6820*l*.—together 21,220*l*. per annum.

From Trincomalee eastward to Batavia, Canton, and New South Wales, the routes, periods, distances, and expenses, would be exactly the same as those which have already been pointed out in the plan of having the communications by the Red Sea, under heads Nos. 7, 8, 9, and 10. Bringing the whole into one table, the total amount is ascertained, and the difference of expenditure in the one route over the other becomes distinctly known.

In order, however, to bring the whole into a tabular form, it is necessary to recapitulate and particularize the different heads, thus :—

1. Falmouth to Cape Verde.
2. Cape Verde (Mayo) to Cape of Good Hope.
3. Cape of Good Hope to Mauritius.
4. Mauritius to Ceylon, Point de Galle.
5. Ceylon, Point de Galle, to Bombay.
6. Ceylon to Calcutta, by Madras.
7. Trincomalee to Canton, by Batavia.
8. Batavia to Singapore.
9. Batavia to Sydney, New South Wales, by Swan River.
10. Coal Depôts, and places to repair boats.

* The time here is only ten days; but the calculation was made for a different division of the mails, and it has not been thought necessary to alter it.

The time in which the different distances may be run has been here stated, but the necessary arrangements for the arrivals and departures of the mails will, in some instances, extend that time. These arrangements resolve the periods into—say 45, 60, 75, 90, 105, 120, &c. &c. days. Thus, if the mails between Alexandria and Bombay cannot be back at Alexandria, as they really cannot be, within 30 days, the object to come up with the regular return Mediterranean mail for England is equally attained if it is back at Alexandria within 45 days; and the same principle applies equally to every other station.

Expenditure

Expenditure by the Cape of Good Hope.

Number of Station.	Fixed Capital required.	Provisions, Wages, &c. Yearly.	Tons of Coals Yearly.	Price of Coals per Ton.	Cost of Coals Yearly.	Total Expenditure Yearly.	Number of Steamers.	Number of Sailing Vessels.
	£	£		s.	£	£		
1	48,000	12,400	14,400	20	14,400	26,800	2	"
2	96,000	24,800	24,000	25	30,000	54,800	4	"
3	48,000	13,640	14,800	40	28,600	42,240	2	"
4	72,000	20,640	16,200	"	32,400	53,040	3	"
5	24,000	6,820	4,800	"	9,600	16,400	1	"
6	48,000	13,640	7,200	"	14,400	28,040	2	"
7—10	194,000	65,560	46,800	"	93,600	159,160	8	1
	• 530,000	157,500	127,700		223,000	380,480	22	1
					71,442	71,442		
	530,000	157,500	127,700		151,558	309,038	22	1
Sub.	418,000	133,400	111,800		136,650	269,910	17	3
Diff.	112,000	24,100	15,900		14,908	39,128	5	2

The first deduction is the sum for the saving in quantity and price of coals, as aftermentioned; the last sum shows the difference of cost and expenditure of the route by the Red Sea, as compared with the route by the Cape of Good Hope; bearing in mind, however, that the expense of the establishment from Falmouth to Alexandria would still remain, admitting that the route by the Cape of Good Hope was adopted.

In the preceding calculation of expenses, the amount is taken calculating that the work is to be done wholly by steam, and at the average rate of 200 geographical miles per day. The use of sails, however, will propel a vessel at the average rate of $2\frac{1}{2}$ miles per hour throughout a general voyage; consequently, *one-fourth* should be deducted from the quantity of

* The same remark regarding the cost of steamers, will apply here, that has been made in the Plan proposed for the Western World.

coals used. This will amount to 31,935 tons, value 44,587*l.*, less 10 per cent. allowed for wastage on the whole, is 12,770 tons, 17,795*l.*, which leaves the net saving of 26,792*l.* Next, the value of coals supplied to the eastward of the Cape of Good Hope is calculated at 40*s.* per ton, as received from Europe. But coals may be supplied in all places to the eastward of the Cape of Good Hope at 30*s.* per ton, thus:—They can be purchased excellent, and in abundance, at 9*s.* per ton at Sydney, New South Wales. Ships coming from that place to ports in the East Indies, and the Mauritius, for freight, would carry these coals, and be glad to convey and to sell them at 30*s.* per ton, a profit of 21*s.*, instead of making nothing, as at present. A further deduction, therefore, of 10*s.* per ton, or one-fourth in value, on the quantity used to the eastward of the Cape, is to be made, which will amount to 44,650*l.*, and which, together with the above balance of 26,792*l.*, makes the sum of 71,442*l.* to be deducted from the total amount of expenditure.

Next, as to the rate of speed—it is calculated throughout the voyage, at the rate of 200 geographical miles per day. In running before the wind, and with the monsoons, the vessels would make more, and in working against them, less; still, on the whole voyage, or from the Cape, for example, to Calcutta, and from Calcutta to the Cape again, the time specified would be sufficient for the work and the distance; while in taking a circuitous course to avoid the force of the monsoons, the steamers would make up by increased speed for the increased distance. The N. E. monsoon may, at any time, be stemmed by a steamer of large power, and such as is now recommended. The S. W., which is the most formidable, may be overcome by the boats on their return,—if by the Red Sea, by making first a course to the southward, and then standing N. W. with the monsoon on their beam. By the Cape of Good Hope, the difficulty would be decreased in this respect, as the boats running southward to gain the Mauritius from Ceylon, would, by keeping to the southward, soon get out of their vortex; while the steamers between Bombay and Ceylon have only to keep in shore to avoid the greatest force of the monsoon either way, and from either quarter. In crossing from the Red Sea to

Bombay, the strength of the N. E. monsoon would be avoided by keeping in with the Arabian, and afterwards with the eastern Asiatic coast.

Taking the line of communication, therefore, between Great Britain and the Eastern World, by the Cape of Good Hope, the expense beyond that which the line of communication by the Mediterranean and the Red Sea would occasion, would be, in capital, 112,000*l.*, and in yearly expenditure, 39,128*l.* The point to consider is, will the advantages, and the security to be obtained by taking the former in preference to the latter route, prove a sufficient compensation for, and a warrant to go to the additional and increased expense? The answer, minutely considering every circumstance, will be, that they are. The obstruction which the land barrier between Alexandria and Suez offers, and must always offer, even when unobstructed by hostile force, to the conveyance of parcels, packages, and goods, is a great drawback indeed. The competition, also, by steamers belonging to other parties and states, would, as regards all these, be a great drawback on this line; and to which must be added, the increased difficulties and drawbacks which would arise in the event of hostilities taking place between any of the great powers connected with the affairs of the Mediterranean. On the other hand, the free communication which would be had, —free also as it would be, or nearly so, from any serious competition by the Cape of Good Hope, the carriage of every thing being in almost every point and place under the British flag and revenue laws—would render this line much more profitable than the line by Egypt and the Red Sea could ever be.

The coal depôts for the lines by the First Plan would be—Gibraltar, Malta, Constantinople, Alexandria, Mocha or Socotora, Bombay, Trincomalee, Calcutta, Batavia, Canton, Swan River, Hobart Town, and Sydney: and for the lines by the second plan, Madeira, Cape Verde, Ascension, St. Helena, Cape of Good Hope, Mauritius, Bombay, Point de Galle or Trincomalee, Calcutta, Batavia, Canton, Swan River, Hobart Town, and Sydney.

The course of post between London and the different places here stated, taking the route by the Cape of Good Hope, would

be—London and Sydney, New South Wales, 195 days; London and Swan River, 165 days; London and Canton, 165 days; London and Batavia, 135 days; London and Calcutta, 135 days; London and Bombay, 135 days; London and the Mauritius, 105 days; and London and the Cape of Good Hope, 75 days, &c. &c., but in working the scheme some stoppages may perhaps be cut off.

Income by the Mediterranean.

Passengers :—Falmouth to Alexandria, 48 voyages, at 50 each, 30 <i>l</i>		£72,000
Malta to Constantinople, 48 ditto, at 15 each, 10 <i>l</i>		7,200
Suez to Bombay, 48 ditto, at 20 each, 55 <i>l</i>		53,600
Ditto to Calcutta and Madras, &c. 48 do. at 25 each, 65 <i>l</i>		78,000
Ditto to Mauritius, 48 ditto, at 10 each, 55 <i>l</i>		24,400
Total		£235,200
Deduct finding ditto, one-third		78,400
Remain clear		£156,800
Freights —Parcels, Packages, and Goods, say		57,600
Freight —Specie, suppose		20,000
Government Troops, Stores, &c.		35,000
Ditto, carrying all Mails and Despatches		80,000
		£349,400
Deduct expenditure		£269,910
Sinking Fund, 10 per cent.		41,400
		311,310
Balance gain		£38,090

Income by Cape of Good Hope.

Passengers:—Falmouth to Bombay, 48 voyages, at 20 each = 960, at 80 <i>l</i>	£76,800
Ditto to Calcutta and Madras, &c. 48 ditto, at 25 each = 1200, at 90 <i>l</i>	108,800
Mauritius to Calcutta & Madras, &c. 48 ditto, at 10 each = 480, at 60 <i>l</i>	28,800
East Indies to Batavia, China, &c. 48 voyages, at 15 each = 720, at 40 <i>l</i>	28,800
New South Wales and Falmouth, 48 voyages, at 10 each = 480, at 120 <i>l</i>	57,600
Madeira, St. Helena, Cape of Good Hope, and Coast- ing voyages, India, 48 voyages, and 48 Ceylon and Calcutta, together, say yearly	28,800
New South Wales coastways, 48 voyages, at 10 each, average 12 <i>l</i>	5,760
Total	<u>£335,360</u>
Deduct for finding <i>one-third</i>	111,786
Balance gain	<u>£223,574</u>
Freights—Parcels, Packages, Fine Goods, 48 voyages, 150 tons each, average at 15 <i>l</i> . per ton of tonnage	£108,000
Freight—Specie, say	35,000
Government Troops, Stores, &c.	35,000
Ditto Mails, Despatches	90,000
	<u>268,000</u>
Total	<u>491,574</u>
Deduct expenditure	£309,038
Sinking Fund, to replace Capital, 10 per cent.	52,900
Sundries, Port Charges, &c.	20,000
	<u>381,938</u>
Balance gain	<u>£109,636</u>

GEOGRAPHICAL OBSERVATIONS ON THE ISTHMUS OF AMERICA,

AND THE PRACTICABILITY OF

A COMMUNICATION WITH CHINA AND NEW SOUTH WALES
WESTWARD THROUGH IT.

A READY and safe communication with these important places, and at the same time with all the most eastern parts of Asia, with all the Islands in the Pacific Ocean, and with all the western coasts of the great continent of America, it will be readily allowed, is of the utmost importance to Great Britain and to the whole civilized world.

Through the isthmus of central America only, a short, safe, and easy passage from Europe to the eastern parts of Asia and the Pacific Ocean, can be effected. That a passage over the Pole exists, is extremely probable, nay, it may be said, is certain. This passage, when found, will be obtained by standing north between Nova Zembla and Spitzbergen, and thence over the Pole, inclining first eastward above Europe, and thence westward for some distance, to Behring's Straits. But admitting that there is a passage open by this route, it can only be so from the end of May to the middle of September, and during this period only comparatively safe; a period much too short to accomplish a voyage out and back from China, and scarcely sufficient to perform the voyage out and back between Great Britain and her territories on the west coast of America situated to the north of Columbia River. Moreover, even if a passage this way was open for a period sufficient to enable the navigator to accomplish the voyage to either of the quarters alluded to,

still it will appear, when the distances come to be noticed and contrasted, that, considering the winds and the weather which ships would encounter in passing over the North Pole into the Pacific, as contrasted with those which they would most certainly meet with in sailing westward through tropical seas, by the Isthmus of America; that the latter route would, upon the whole, be the best, and in all respects preferable and most expeditious.

A communication by the latter quarter may be advantageously and speedily opened up, both for steamers and for sailing vessels; and in the conveyance of mails, both or either may be employed, as shall appear to be most eligible and most advisable. To lay open such a communication as this would prove, is an object of the first importance, worthy of the attention of any body of men, and of any nation, but more especially of a nation like Great Britain, to support and to patronize in every way. By this route, all vessels, mails, and merchandise could reach the more distant and wealthy parts of Asia and Australasia, sooner and safer, and through seas comparatively always tranquil, borne by winds scarcely ever varying, and always favourable, than these can do by any other course that is known, or that remains to be discovered. In an especial manner, this would be the case as regards all the western coasts of America, North and South, the Islands in the Pacific, New South Wales and Van Dieman's Land, Japan, China, Eastern Siberia, &c. The perpetual trade-winds would bear vessels before them from Madeira to Canton, and almost to Sydney, while in returning they would merely have to run through these trade-winds, with a steady breeze on the beam, until they reached the latitude of 30° to 32° north, when the steady and certain, and strong westerly and south-west winds, would bear them in these parallels first, to the west coast of America; from which point winds off the land, and north-easterly trade-winds, would carry them, in the second place, to the point of communication with the Atlantic, through the Isthmus of central America; from which they, in the third place, would run to the north, carried by the trade-winds and the Gulf stream, into and through the Gulf of Florida, into the variable winds, which would quickly

bear them to all the eastern ports of North America, and to all the ports in Europe, or along the coasts of the Mediterranean.

By this channel, namely, through the Isthmus of central America, the valuable, but almost unknown, British territory on the west coast of North America, would be brought near, and cleared, and cultivated. So also would the whole remaining western coast of America, from Nootka Sound to the southern extremity of Chili, be brought near to the civilized world, and become, in consequence, also peopled, cleared, and cultivated. Without such a communication is opened up, these coasts, and states upon them, can scarcely ever be brought to this state, but to which it is most desirable for the general interests of the world, and of the human race in it, that they should be brought. Situated as they are, there is no produce of their soil which their inhabitants can raise that can bear the expense of carriage to enable it to come into competition in the general markets of the world, with similar articles raised in other countries, which are all more accessible and placed nearer markets; and unless the soil of the western coasts of America and the islands in the Pacific are brought into cultivation, and peopled by people more civilized and industrious, it is obvious that these countries and the states and population at present in them, must remain in the poor, ignorant, miserable, and uncultivated state and condition in which they are, of little service to themselves or to the remainder of the world.

The points where the communication between the Atlantic and the Pacific are most feasible and practicable, is at one point on the southern boundaries of the Republic of Mexico, and the others within the territories of the Republics of Guatemala and Venezuela. The neck of land, or isthmus, which connects North and South America together, may be taken to extend from 8° N. lat., in the meridian of 77° W. long., to the parallel of 18° or 19° N. lat. in the meridian of 100° W. long. Narrow as the continent of America is in all this space, but more especially in the southern portion of this space, recent surveys have reduced it still more; and it is not improbable that, when the late surveys of the west coasts within the tropics are published, that it will be found to be still narrower, and more

contracted than is supposed, or than the late accurate surveys by Captain Owen, under the orders also of the British Government, of the shores of the Gulf of Mexico, have shown it to be ; and consequently the communication between the Atlantic and the Pacific will be found to be still shorter and more easy than it has been, or is even now considered to be.

The first two points within the limits above mentioned, where communications are most practicable, are the following :—*First*, in the territory of Mexico, from the mouth of the river Guaza-coalcos, on the Gulf of Mexico, to the mouth of the Chimalapa, in the Gulf of Tehuantepec, on the Pacific, between the parallels of $16\frac{1}{2}^{\circ}$ to $18\frac{1}{2}^{\circ}$ N. lat. The distance from sea to sea at this part is 92 geographical miles, in a south-west direction. The sources of the streams which flow, the one eastward into the Gulf of Mexico, and the other westward, into the Pacific, come within the short distance of 20 miles of each other. *Secondly*, The channel from the Gulf of Dolce, which communicates with the Gulf of Mexico, to the southward of Honduras or the Balize, to Trinidad, situate on a bay in the Pacific, to the north of Point Remedios. The distance of the Gulf of Dolce to the Pacific, at the point just mentioned, is 60 geographical miles, with the advantages of the courses of rivers which bend their courses to the opposite oceans. But if it is correct that the River Balize is, as it has been stated to be, navigable upwards in its course to a distance of 200 miles, then it must penetrate so deeply into the continent, that its sources must approach to points still nearer to the Pacific than the Gulf of Dolce, or its tributary streams. It is doubtful, however, if any canals could be cut in either of the lines mentioned, because the land rises very considerably, forming in the central parts what is denominated Table Land, and is in general studded with ridges and high volcanic mountains, while the ports on either shore are neither very commodious nor of safe approach. There has been of late years also a tolerable good road constructed in the first-mentioned line, which will tend greatly to facilitate the communication from sea to sea, so far as the interests of Mexico are immediately concerned.

These points adverted to are the only probable channels of communication to the northward of the River St. Juan and Lake Nicaragua, which, like the last-noticed line, are situated in the territory of the Republic of central America, the capital of which is San Salvador. For reasons which will subsequently be adduced, the consideration of this important position is left until those points in the Isthmus of Panama and Darien have been particularly noticed and examined.

The first points to examine are those which are situated to the southward and eastward of Panama, and which are immediately connected with, and contiguous to, the Gulf of Darien. These are as follow:—In the province of Choco, famous for its gold mines, there is a ravine called Rapsadura, extending between a head branch of the River St. Juan, which, after a course from N.E. by N. to S.W. by S., falls into the Pacific in lat. $4^{\circ} 5' N.$; and the river of Quito, one of the head branches of the River Atrato, which flows in nearly a due north course into the Gulf of Darien. Through the ravine just mentioned, the parish priest of Novita dug a small canal in 1778, which was navigable during the rainy season, and by which canoes, laden with coffee and other produce, passed from one sea to another, a distance of 250 miles; as they found it requisite and convenient.

The next point, and more to the north beyond Cape St. Francisco de Solano, in about $7^{\circ} 30' N.$ lat. is, from the mouth of the Cupica, or Tupica, as it is denominated in some maps, along that stream, which descends from the eastward into the Pacific, through a break in the mountains to the head of the river Naipi, a distance of from 15 to 20 miles only. The latter river is deep and navigable, and flows through a lake of considerable magnitude, nearly due east, into the River Atrato, a little below the village of Zitara, about 60 miles from the mouth of the latter stream, in the Gulf of Darien. The distance from the Pacific to the Atrato, through the channels mentioned, is only 60 geographical miles. The Atrato springs (its farthest branch the Rio Chame) in the rising ground, in $5^{\circ} 40' N.$ lat. and $75^{\circ} 15' W.$ long., and runs almost due north, a distance of 200 miles, into the Gulf of Darien. At this point,

the western and secondary chain of the Andes is broken and interrupted, and there is good reason to believe that they continue to be so in several places more to the northward : in fact, that they cease, and are succeeded through all the Isthmus of Darien and Panama, by a low range, broken into fragments in different places. At the point under consideration, namely, by the Cupica and the Naipi, the Spanish Government had it in contemplation, about forty years ago, to open a communication from sea to sea, by means of a canal ; but the events in Europe, and the decay of their power, prevented the important enterprise from being undertaken. The Gulf of Darien, and the course of the Atrato, were rigidly guarded and concealed by the Spanish Government, so much so, that by special decrees the punishment of death was denounced against every one who should either permit or attempt the exploration of the country in these parts. This showed clearly that their practical knowledge gave them to know, that a communication between the Atlantic and the Pacific was easy and practicable in more places than one in this quarter of their dominions.

The next point where the communication is practicable, either by water or a short distance by land, where a canal could be cut, or a road made, is between the Gulf of St. Miguel on the Pacific, to the bottom of the Gulf of Darien, due east, and also to the Port de Escoces, or *New Edinburgh*, more to the N. (N. E. by E. from St. Miguel) in the upper part of the Gulf of Darien, on the Atlantic. The distance from the head of the Gulf of St. Miguel to the latter point is 30 miles, and to the former 45 to 50 miles, but with river communications to within 16 miles of the latter, and 10 miles of the former. The Gulf of St. Miguel opens to the Pacific from $8^{\circ} 8'$ to $8^{\circ} 17'$ N. lat., and runs E.N.E. and N.E. by E., fully 22 miles into the country, its centre crossing the meridian of 78° W. long. As has been shortly adverted to, the rivers which seem to form the Gulf of St. Miguel run deeply into the country, both to the S. E. and to the N. E., one particularly, the Chuquanaque, with an extremely zigzag course between ridges of mountains, is laid down to within 10 miles of New Edinburgh ; which, by the last Admiralty charts, drawn from the

best Spanish authorities, is placed in $8^{\circ} 55'$ N. lat. and $76^{\circ} 45'$ W. long. To the S. E. the source of streams which run into the Gulf of San Miguel spring within 15 miles of the mouth of the Atrato, while branches of each approach within half that distance of each other. The land in this quarter is clearly low, because, for a considerable distance from its mouth, the Atrato runs through a very marshy and flooded country. New Edinburgh, or Port de Escoces, is an excellent port, commodious, and well sheltered, and is the celebrated spot where, in 1699 (one hundred and thirty-eight years ago), the Scotch colony, under the direction of a Scotch clergyman, named Paterson, a most intelligent and enterprising man, was established, in order to open up a communication between both seas, and which was afterwards so shamefully, disgracefully, stupidly, and unguardedly abandoned by the then Government of Great Britain, spurred on to the act by the miserable and contracted commercial rivalry of England and Holland; and afterwards by the jealousies, the fears, and the representations of the Government of Spain, which at that time had really no right to the country, the natives thereof being independent of, and at war with, Spain. The Gulf of Darien is of easy entrance, and penetrates southward to a little beyond the 8° of N. lat., and to the southward of the principal mouth of the Atrato; the centre of the bottom of the Gulf being in the meridian of $76^{\circ} 55'$ W. longitude.

The next and last point to the southward and the eastward of Chagre is by the river of Chopo, about 25 miles to the eastward of Panama. Narrow as the land in this quarter has been held to be, still the charts and maps lately published by individuals, and by the authority of the Admiralty, show that it is much narrower than what has hitherto been calculated upon; and in the particular point under consideration, very narrow indeed. From the mouth of the River Chopo, opposite the little island Chepillo in the Pacific, to the bottom of the Gulf of St. Blas or Mandinga on the Atlantic, is only about 20 miles (some maps make it still less). In this space, the mountains to the eastward of the high chain S. of Point Manzanillo and Porto Bello, which give rise to the Chagres, and

its tributary streams, running first westward and then north-west into the Atlantic, are again, according to Captain Lloyd, interrupted and broken, affording thereby a readier communication between the two great oceans, the Atlantic, and the Pacific. In an apparently good Spanish map of the Isthmus, upon a large scale, the River Chopo or Bayano is represented as being formed by two branches, one under the name of the Rio Canizas, springing to the southward of the Pico de Carti, a hill only four miles from the Atlantic, in the Bay of Mandinga; the whole course of the river to the Pacific on a general south bearing, being only 22 miles. The source of the Chagres comes within 15 miles of the lower course of the Chopo; and some good maps lay down a river which joins the Chopo, near its mouth, as coming from the N. E., its sources likewise being within a very few miles of the Atlantic. Here, certainly, is a point from which, and on which a communication could be opened up at any rate by a good road, so as to afford a speedy conveyance for passengers, mails, and goods, between the two seas; while it is also exceedingly probable that, even in this short space, great facilities and assistance could be obtained by canal navigation, and by the rivers just mentioned.

The points, however, where a canal could be cut of sufficient depth to admit the passage of large ships, and thus save the delay and the expense which loading and unloading cargoes would occasion, where roads of any description remain the only means of communication, and where the approach on either coast is safe, and interior water communication most abundant, are, certainly, the points which should be fixed upon and selected, in order to effect the object so important to the whole world. The two points hitherto the best known, and considered to be the best adapted for the purpose, are, first, the line from Chagre on the Atlantic, to Panama on the Pacific; and secondly, the line, perhaps the best of the whole, from the mouth of the River St. Juan on the Atlantic, by that river and Lake Nicaragua, to Rialejo, or Gulf Papagayo, on the Pacific.

The Panama line comes most properly the first point for consideration. Here the survey, by Lieutenant Lloyd, in 1829, gives some certain data, and some curious and important

information. He tells us pointedly, from actual observation, that which good Spanish maps indicated, and what was more vaguely told by others. According to him, on the eastern side of the province of Veragua, the Cordillera breaks into detached mountains, their sides exhibiting only bare rock, almost perpendicular. To these, as approaching nearer Panama, succeed numerous conical mountains, arising out of savannahs and plains, and seldom exceeding from 300 to 500 feet. "Finally," says he, "between Chagre on the Atlantic side, and Chorera on the Pacific, these conical mountains are not so numerous, having plains of great extent, interspersed with occasional ranges of hills of inconsiderable height."

Such is the Isthmus of Panama, where the distance from sea to sea is, even according to the present charts, only 30 geographical miles, and from the mouth of the Chagre to Panama, 33 miles.* Of this distance the Chagre, which has a circuitous course, is navigable for 40 miles to Cruces—distant from the sea in a direct line 21 miles, and from Panama 14 miles. At its mouth the Chagre is one-fourth of a mile broad, and at Cruces about 150 feet: in its middle course the depth is 24 feet. The current runs at the rate of from three to four miles per hour. It is full of numerous, constantly shifting sand banks, and sunken trees, which, with the current, render the

* From the mouth of the Chorera to the Bay Lemon, the distance is 27½ geographical miles. There is, however, reason to believe, that the distance from sea to sea is still less. Ulloa, who was an accurate and scientific observer, places, and from actual observation, Chagres in 9° 18' 40" N. lat., and Panama in 8° 57' 41" N. lat. Not being able to observe an eclipse of Jupiter's satellites, owing to the obscuration of the atmosphere, he was obliged to calculate the longitude from bearings and distances. In these, however, he could not be far wrong; and by these he places Cruces 21' east of Chagre, and Panama 9' 30" east of Chagre, which, if he is correct, brings the breadth of the land from the Castle of Chagre to Panama, to be only 23 geographical miles!!

Since the preceding pages were written, Captain Washington, secretary to the Royal Geographical Society, has favoured me with the longitudes of the places adverted to, as ascertained by Captain Forster, and in February 1837 by Captain Belcher, R.N. Porto Bello is in 79° 30' West long.; Chagre, 79° 55'; and Panama in 79° 29' 20". This gives the distance from Chagre to Panama 33 geographical miles. Porto Bello is in lat. 9° 32' North. From thence to the Pacific, a little to the east of Panama, is 30 miles. From Chagre to the mouth of the Caymito will be 30 miles. Ulloa's calculations of longitudes would thus appear to be wrong.

navigation tedious, difficult, and even dangerous. At its mouth the coast is very sickly, as indeed the country through its course also is; but when the land is cleared, it will doubtless become more healthy. When the current is very rapid, it requires four or five days to reach Cruces. The height of the land which intervenes between Cruces and Panama, has been accurately ascertained by Mr. Lloyd; and that portion of the country which he passed over in his survey along the old road to Panama, is certainly the most elevated of the whole, as is shown in the following summary of his survey.

This survey commenced from the eastern suburb of Panama, at high-water mark, and ran along the old road to Porto Bello, unto the point where it crossed the Rio Chagre,—a distance of 1828 chains, 22½ miles. The highest land passed over was the ridge Maria Henrique, 12½ miles from Panama, and 10 from the Chagre. Its height is 633·32 feet. The point where the road approaches the river, is 169·840 feet above the level of high-water mark at Panama; and the bed of the river from whence the survey commenced downwards, is 152·55 feet. Descending the river 1545 chains, 19½ miles, Mr. Lloyd came to the village of Cruces, after a descent of 114·60 feet; thus making Cruces to be 37·96 feet above high-water mark at Panama. From Cruces to Gorgona 410 chains, 5½ miles, the fall is 16·13 feet; and thence to a small gravel bank, named "*Playa los Ingenieros*," distant from Cruces 1302 chains, 16½ miles, the fall is 21·82 feet, precisely level with the high-water mark at Panama. At 2682 chains, 33½ miles below Cruces, Mr. Lloyd first observed the effects of the tide from the Atlantic, the level of the river at this point being 13·65 feet below the level of high-water mark on the Pacific. At 507 chains, 12 miles, further down, reached La Bruja, where the water became brackish; the level of the surface of the river being 13·55 feet below the high-water mark at Panama. From La Bruja there was no perceptible descent to the Atlantic. The whole distance gone over in levelling from sea to sea, was 82 miles.

The tide at the mouth of the Chagre rises only one foot, or 1·16 feet; but at Panama the spring-tide in the Pacific rises in

a mean level to the height of 21·22 feet, though high winds and currents occasionally raise them to the height of 27·44 feet. At low water the sea sinks proportionally at Panama below the level of the Atlantic: the reason for this difference is obvious. The current towards the Gulf of Mexico, and which afterwards forms the famous gulf stream, carries off rapidly the waters in the Atlantic; while, on the contrary, the current which flows northward along the western coast of South America, and the tide which flows into the bay of Panama, from the south-west from the Pacific, heaps, as it were for a moment, the waters into the bay and on the shores of Panama, and occasions the tides alluded to, and differing so greatly from those which are seen in the Atlantic at the short distance on the opposite coast.

From Maria Henrike to Cruces is only about nine miles. In the intermediate spaces are several savannahs, and, according to the Spanish maps, a very considerable river, called Rio de los Laxas, which enters the Chagre a little above Cruces. This river flows westward from Mount Maria Henrike; while the principal branches of the Rio Grande, which flows south into the Pacific immediately to the westward of Panama, spring from the south-west side of the mountain already mentioned. The branches of this river and of the Chagre approach very near each other; while savannahs, according to Lloyd's map, fill up, as between the Rio Grande and the Obispo, the most of the intervening space. In this short distance, and with the aid of these rivers, a water communication, were the country properly examined, it is conjectured, might be found. From Cruces the road, for a short distance, ascends considerably; after which it runs along a ridge, with a valley on each side; that on the south the deepest, being about 300 feet, and descends until it comes to a plain, through which it stretches and runs to the city of Panama. It is by quitting the old Spanish track or road, and continuing along the savannahs and levels, that it is believed the water communication adverted to could be effected; and where the distance, taking into account the short bends which may be necessary, is so short, probably not twenty miles!

These observations naturally call the attention to the con-

sideration of a line of communication which may be had from the River Trinidad to the Pacific, either at Panama or a little to the westward of that town, in the bay of Chorera, at the mouth of the Rio Caymito. The condition of the country in that portion of the Isthmus has already been generally described, on the authority of Mr. Lloyd; and from what he has stated, and which is in unison with other information, not a doubt can remain that a water communication can be opened up in this quarter from sea to sea. Lines for rail-roads have already been chalked out in both places alluded to; and considered so easy that the sum of 400,000 dollars is estimated as the whole expense necessary to complete either. It is scarcely necessary to observe, that wherever a rail-road can be constructed, a canal may be made. The River Trinidad is a branch of the Chagre, which comes from the westward and from the south-westward, and joins the latter at about eight miles due S.W. from its mouth. The Trinidad is navigable to Embracadero, and for some distance, from its mouth, is both broad and deep. Its branches penetrate a considerable way into the country, and approach closely to the branches of the Caymito, a considerable stream, which flows through a country, in its lower course, comparatively level; while between its upper course and the Trinidad the distance is covered with savannahs and small conical hills, and in some places marshy plains—a complete proof of the level nature of the country. The streams which rise to the westward of the line alluded to, namely, in the hills stretching to the province of Veragua, mostly flow into the Chagre, another proof of the direction in which the mountains in this quarter lay; and that there is no continued chain, as has been stated, extending in the centre of the Isthmus throughout, and joining together the Andes of North and South America. From the junction of the Trinidad with the Chagre to Panama is only $26\frac{1}{2}$ miles, and to the mouth of the Chorera 23 miles!

Short, however, as the distances just mentioned are, they are considerably reduced, when the navigation of the Trinidad on the one side, and of the Caymito on the other, are taken into account. These reduce the greater distance at least one-half; and in it, as well as the lesser distance, the nature of the coun-

try, for a considerable portion of the distance, if not throughout the whole distance, overcomes almost every obstacle, or rather renders every obstacle that may offer, possible to be overcome. From that portion of the River Chagre, which is level with high-water mark at Panama, south-westward to that city, the country is interspersed with savannahs, and consequently level. Indeed, for "a few miles" inwards from Panama, the *plains* are below the level of the sea, thus rendering the formation of a canal easy; while, on the north side of the most elevated spot, the numerous streams which spring and flow to the Chagre would afford an abundant supply of water for any canal that may be constructed, however large that may be. The distance, therefore, where any serious difficulty could occur, must be reduced to a mile or two; and in that distance, should any of those conical mountains, from 300 to 500 feet high, or insulated ridges of inconsiderable height, which Mr. Llyod tells us are here and there to be found in these places—should any such intervene, they may be cut through without any great difficulty. The excess in the rise of the tide in the Pacific, nearly 21 feet above its rise in the Atlantic, would tend greatly to accelerate the construction, in this part of America, of a water communication; which water communication, however, be it observed, must be sufficient to admit the passage through it of ships of the very highest tonnage, and at all seasons; otherwise it will not answer the general purpose, nor interests of the world. Less might indeed suit for the conveyance of mails; but any thing less would occasion such an additional expense in unloading, transporting, and again loading goods, as would render the tedious navigation of Cape Horn preferable.

Lake Nicaragua, &c.

The next to be considered, and perhaps the last and the best channel by which a communication between the Atlantic and the Pacific could be opened up, and safely carried on, is through central America, or the Republic of Guatemala, by means of the River St. Juan and the Lakes Nicaragua and Managua, or,

as the latter is more generally called, Leon. These lakes are connected with each other by a river, and are navigable for ships; Nicaragua for ships of the line. The River St. Juan forms the outlet of both into the Atlantic Ocean, and is, according to Estella, navigable throughout its course for ships of large burden. The mouth of the St. Juan, according to the late survey by Capt. Owen, lays in $10^{\circ} 53'$ N. lat. and in $83^{\circ} 40'$ W. long. Leon, the capital of the province in which Lake Managua is situated, and from which the name of Leon is generally given to the latter, stands, according to the best Spanish authorities, in $12^{\circ} 20'$ N. lat. and $86^{\circ} 45'$ W. long.; and its port, Rialejo, on the Pacific, in $12^{\circ} 29' 50''$ N. lat., and $87^{\circ} 6'$ W. long. From the mouth of the River St. Juan to Rialejo, in a bearing of N. 66° W. the distance is 235 miles; and this bearing runs nearly through the centre of the lakes and the course of the River St. Juan. From the point where the River St. Juan issues from the Lake Nicaragua to the point where the River Lapita, which issues from Lake Managua, falls into the former, the distance, taken on the best maps, is about 95 miles. Rialejo is situated on a river of the same name, which is deep, and capable of holding in the harbour 200 sail of the largest ships. The harbour is well protected from the force of the Pacific, and from storms, by an island stretching out before it, with two channels between it and the main land; the one opening to the south-east, and the other to the north-west. The adjacent country is very fertile, but the place itself is reckoned unhealthy, owing to some swamps in the vicinity and to the southward; but which, it is believed, might be drained and cleared, which would render the climate salubrious, or, at least, as much so as any tropical climate can be to Europeans.

Lake Nicaragua, in its broadest part, is about 35 miles: it has several considerable islands, some of them active volcanoes, and all of them fertile. The country around its shores is stated to be very healthy and very fertile, and studded with high peaks, mostly volcanic, and many of them, on both sides, volcanoes in activity. At the point on its north-east corner, where the River St. Juan issues from it, there is (according to some of our best maps) erected the castle of St. Carlos, and

lower down, about 16 miles on the banks of the river, is placed the castle of St. Juan, which castle was taken by the English in 1780. Alcedo says that this river is navigable for ships of large size; but others add, that during the dry season, when the river is low, in one or two places the navigation is obstructed by sand banks, which, however, could easily be removed by a deepening machine, such as that used for a similar purpose on the Clyde. Lake Managua in its western shore approaches in its southern portion to within 8 to 9 miles of the Pacific; and here the conical peak range appears to be discontinued and broken. So also it is in the route from Leon to Rialejo, a distance of 21 miles. The next nearest point of communication is to the southward of the town of Grenada, situate on the upper part of Lake Nicaragua, westward to the port of St. Juan, which runs considerably into the country from the Pacific. Here the distance from the lake to the sea is 10 miles. The next point of communication is from the neighbourhood of the town of Nicaragua to the bottom of the Gulf of Papagayo, the distance being about 15 miles. The river Partido flows from the S. E. through a course of fully 60 miles, and enters the Pacific at the bottom of the Gulf of Papagayo. At this point, also, the volcanic peaks and the ridge appear to be interrupted, and very low, thereby rendering a passage more probable and easy. On the neck of land, also, between the upper part of Lake Nicaragua and the Pacific, there are situated in three different places between the Pacific and the interior part, three lakes, which, while it shows the low nature of the coast, tends also to shorten very considerably in this otherwise very narrow neck (12 miles), the space that intervenes between the lake and the ocean.

The American coast of the Pacific is, in fact, bordered with an alluvial plain, varying in breadth, which tends still more to lessen the breadth of the high lands in every quarter. Between the bottom of the Gulf of Papagayo to Lake Nicaragua, the distance, the alluvial strip included, is, (see Journal R. G. S. vol. vi.), only 29,880 English yards, nearly 15 geographical miles. The highest point of land that intervenes, is only $133\frac{1}{2}$ Spanish feet (the Spanish foot is 0.9267 English) above the level of the

sea, and only 19 feet above the level of the lake. The lake is very deep, and at this point is said to be 15 fathoms. The surface of the lake is thus 133½ Spanish feet above the level of both oceans. The tide in the Pacific in the Gulf of Papagayo rises about 11 feet, decreasing in its rise towards the north, and increasing its rise towards the south. When Mr. Canning proclaimed that he had "*called a new world into existence*," he ought, as he then might, to have kept these places, the key to both worlds, in his power, and in the power of his country.

Some Spanish authorities state, that Lake Nicaragua has a communication with the Pacific, but at what point does not appear, nor is it probable. Others state that it has a tide in it like the ocean; and if so, this certainly indicates a communication with it by some low and level channel, where the tide from the sea drives back the flow of waters from the lake. To ascertain these points are objects of great importance, and well worthy the attention of the civilized world; and the wonder is, that it has not before this time been attempted. All the old and best Spanish writers, who wrote either from access to the best materials, or from practical information regarding the Spanish territories in South America, but more especially Estalla and Alcedo, mention, in the most pointed manner, that, by the places which have just been considered, the nearest and the safest channel would be found, nay actually existed, whereby a communication could be opened up between the Atlantic and the Pacific; and farther, that the possession and the command of Fort St. Juan and the river St. Juan on the one hand, and of the port of Rialejo on the other, gave the holder and possessor of them the key to and the command of both oceans. Like the Gulf of Darien, all entrance into or examination of this quarter of America by foreigners, or travellers in general, was prohibited by the Spanish government, under the punishment of death for a violation of the law. The Spaniards were particularly averse to and jealous of England, or Englishmen, becoming acquainted with this portion of America.

In some one of the points mentioned, and most probably from Lake Managua to Rialejo, or from Lake Nicaragua to the Gulf of Papagayo, the best line for a communication be-

tween the Atlantic and the Pacific will be found. The shores of Lake Nicaragua are tolerably well cultivated, and it has several harbours. Numerous streams flow into it from all sides, but particularly from the north. The river St. Juan is a considerable stream—as large, say the Spanish writers, as the Guadalquivir in its lower course. In a distance so short, a canal, fit to bear ships of the very largest tonnage, could be cut, at certainly no very heavy expense; say, at the rate of 300,000*l.* for 10 miles. Even if the river St. Juan should not be found to be navigable, and that it might be most advisable to cut a canal along its banks, from the Atlantic to the lake, the distance is not very great (45 or 50 miles), and the country presents no insuperable obstacles to it; on the contrary, it is believed to be easy of access. This distance might be cut for 675,000*l.*—a small sum even joined to the other, when the immense object to be attained is considered. The choice of position, after considering attentively every point, will remain between Chagre to Panama, and between St. Juan and Nicaragua to Rialejo, as to which is the best line for a water communication; for it is pretty clear that the lines to the eastward and to the southward of Panama, narrow although the neck of land certainly is in these parts, can only be looked to as points for a speedy road communication in some, and for small craft in the others.

The jealousy of the government of Spain formerly sealed up every possible line of communication between the Atlantic and the Pacific, in all the places mentioned, from the rest of the world; and it is probable that the jealousy, and also the poverty and inability of the new governments lately started up in these parts may continue to do so, if they are allowed to do so, or if they remain unaided in the enterprise by foreign capital, and not be impelled thereto by foreign, but particularly European influence. A glance at the map of these parts of America, and at a map of the world, and a moment's reflection and consideration bestowed on the great interests that depend upon it, that would be laid open and connected by such a communication, is sufficient to show the prodigious benefits which would therefrom flow to the human race, and especially

to the governments and the people of North and South America, and those fine but comparatively poor and miserable portions of this globe. The treasures and the labours of nations would be well bestowed in completing such an undertaking. Laying open such a communication would do more to people, to cultivate, and to civilize the world, than any other effort—than all other efforts made by the world at large, when combined and brought together. No nation in the world is so deeply interested in seeing a proper communication through the best of the channels pointed out laid open, as Great Britain; and no other nation could so well undertake it as she can. The immense empire which is rising under her flag in New Holland; the large territory which she would thereby bring within the sphere of cultivation and civilization on the west coast of North America, to the north of Colombia River, where both the climate and the soil are good; the vast and important trade which she has with China, and may yet have with all the beautiful islands in the Pacific, with Japan, and with all Eastern Siberia; and the very great trade which she has, and would have with all the shores of America on the Pacific,—all render the attainment of the object contemplated peculiarly her interest, and peculiarly her province to undertake, support, complete, and protect, in a way and on a scale worthy of the intelligence, the enterprize, the strength, and the resources of her government and her people. The number of people, and the traffic which it would in time add to the present trade and population of the world, exceed the powers of calculation.

Taking Lake Nicaragua as the point for the communication between the two seas, the calculations which have been made as to periods and distances connected with the conveyance of mails from Europe, in order to cross the Pacific, will not be materially different from those which would arise were Panama to be chosen as the point of communication. Confining every thing to this route, it is necessary to consider and to show what advantage trade and commerce would derive from it; what extent of commerce would pass through this line of communication; and what revenue could reasonably, and with

propriety, be raised therefrom, in order to prove a remuneration for the expense of the undertaking.

The official records of British trade and commerce, and also the official records of the trade and commerce of the United States, will enable us to estimate these points just alluded to, for the present period, with considerable accuracy. From both records, the following extent and amount of imports and exports, and tonnage, engaged in transporting these, are selected; premising that, as regards both countries, the value of each is, without either freight or charges: and as regards the former, viz. Great Britain, the value taken is what is denominated, in the Customs return, "*the declared value*," and which, exclusive of freight and charges, is considerably below the real amount. The commerce of both states mentioned, with all the countries about to be enumerated, would most certainly pass through the channel already alluded to, besides a considerable portion more from other countries, but which is uncertain.

<i>Great Britain with</i>					
	Exports. 1834	Imports. 1833.	Tonnage Inwards.	Tonnage Outwards.	
China	842,852	3,528,635	29,308	8,887	
New South Wales . .	716,014		12,400	29,567	
Java	410,273		2,435	4,289	
Philippine Islands . .	76,618		1,958	728	
Siam	19,742		"	337	
E. Indies & Ceylon, $\frac{1}{2}$	1,289,284	1,240,358	37,731	45,416	
New Zealand . . .	936		382	3,650	
Chili	896,221		7,415	6,532	
Peru	229,235		2,768	2,176	
Mexico, $\frac{1}{2}$	114,902		1,845	1,498	
Whale Fisheries, $\frac{1}{2}$.		100,000	11,353	11,007	
Guatemala, $\frac{1}{2}$. .	10,122	10,122	136		
	<u>£4,606,199</u>	<u>8,042,164</u>	<u>107,731</u>	<u>114,087</u>	
Freight & charges, &c.	921,235			107,731	
Foreign & Colonial $\frac{1}{2}$	1,381,858				
		<u>6,303,093</u>	Total tonnage	<u>221,818</u>	
Total British trade	<u>£14,345,257</u>				

Exclusive of specie—the amount of which, from the western coasts of America, cannot be less than 10,000,000 dollars yearly to Great Britain, and perhaps half as much to the United States. The value of British imports from Western America is not given in the official tables in any tangible shape, and therefore the imports are taken to be the same as the exports. The amount of imports from China is taken correctly from the tables; and the value of all the rest, as near as possible, from the same tables, in proportion; the whole being entered to all countries east of the Cape, China excepted; but in this amount also the amount for freight and charges should, it is thought, be added. The proportion of foreign and colonial produce, &c. to British manufactures exported, is, according to the official tables, as near as may be, the proportion taken. The value of the whole British trade to the places specified, may therefore be fairly taken at 17,500,000*l.* exports and imports, and exclusive of the profits thereon.

Next comes the trade which the United States have with all these places. In this there are more precise data, as the value both of exports and imports is given in their tables; but it may be observed, that the amount, both as regards imports and exports, is given exclusive of freights and charges, which in almost all the articles carried is greater in proportion, as regards the American trade, than in British produce and manufactures. It may also be observed, that the whole trade which the United States have with all countries to the eastward of the Mauritius, would pass through, and return through, the communication made in central America, as the nearest and the best route for them. The following was the trade and tonnage of the United States with the places specified in 1835:—

United States with

	Imports.	Exports.	Tonnage Inwards.	Tonnage Outwards.
British East Indies, dolls.	2,293,012	406,543	7,400	5,655
Dutch ditto	582,159	581,149	3,497	8,669
Spanish ditto	283,685	15,919	2,647	222
Asia generally	377,842	434,037	479	2,593
China	7,892,327	1,010,483	15,550	8,123
Mexico, $\frac{1}{2}$	4,033,034	5,265,053	18,225	15,768
Chili	787,409	1,476,355	2,535	9,191
Peru	618,412	58,863	493	685
South Seas	27,348	97,169	39,506	280
N.W. Coast America .	„	118,813	45,886	
	<u>16,595,228</u>	<u>9,464,384</u>	<u>136,218</u>	<u>51,216</u>
$\frac{1}{2}$ freights, &c. &c. .	4,123,807	2,388,093	51,216	
	<u>20,719,035</u>	<u>11,852,477</u>	<u>187,434</u>	
	11,852,477			
Total United States .	32,571,512			
Ditto specie	5,000,000			
Grand total, dollars .	<u>37,571,512</u>	—Sterling, £7,827,398 at 4s. 2d.		

General Trade and Tonnage.

	Value Trade.	Extent Tonnage.
British	£17,500,000	221,818
United States	7,827,398	187,434
Total	<u>£25,327,398</u>	<u>409,252 tons.</u>

To the above should be added all the specie sent both by Great Britain and the United States to the Eastern World, particularly to China, to purchase cargoes, from the States alone about 7,000,000 dolls.; also all the tonnage which goes, or would go, from one coast to another in the three republics of Venezuela, Guatemala, and Mexico. To these states, such a communication would prove of inestimable value, and tend very greatly to add

to the revenue to be obtained from the traffic by it. There are other nations, also, besides Great Britain and the United States, which traffic with the quarters of the world already specifically alluded to, particularly France, Spain, and Holland; but no accurate account of such trade has hitherto come in the writer's way; though, taken collectively, it must be to a considerable amount. Moreover, the whole trade between Holland and Java, and between Spain and the Philippine Islands, would pass by the channel under consideration, and the trade which both nations has with these places is well known to be very considerable.

Such as it has been described is the trade at this moment; a sure foundation upon which the magnificent undertaking under consideration would, at the outset, have to build. The increased and increasing communications through the grand thoroughfare goes beyond calculation, and would most certainly exceed every thing that ever has been seen, or that ever can be witnessed, in any other portion of this globe. The trade of mighty empires would sink into insignificance, when compared, in all their present magnitude, with what it would become one hundred years hence. Admitting that it cost 1,000,000*l.* to complete the navigable communication, (and there are good grounds to believe that it could be done for one-half of the sum,) the question or point next to be considered is, what would the revenue be, which could be derived from it? To exact a per-centage on the value of the commerce which passes through it would be uncertain, and liable to evasion, and consequently give much trouble, and occasion much vexation; and therefore it would be best to exact so much per ton, the exact extent of which the register of each ship or vessel so passing through the canal would at once and readily determine. The question is, What should the sum so levied, or the toll, actually come to be? Ten shillings per ton would certainly be a moderate sum; and taking it so it will be shown how it will pay at the outset.

Cost and Revenue.

Revenue 410,000 tons yearly, at 10s. .	£205,000
Capital 1,000,000 <i>l.</i> interest 5 per cent. .	£50,000
Dividend in Stock 10 per cent. . . .	100,000
Expenses, management, and repairs . .	20,000
Surplus fund	35,000
	<hr/> £205,000

Thus affording from the outset a fair and profitable return, and which may reasonably be expected to be doubled in a very few years afterwards.

Conveyance Mails and Passengers.

Hitherto the matter has been considered entirely as relates to the practicability and probable expenditure to be incurred in carrying the Plan into effect, and the remuneration to be obtained from the Plan when completed. It yet remains to show the advantages which will be obtained in the courses and distances by this route, as compared with other routes, and also with the route by the North Pole—even were this latter practicable throughout the year, but which it almost certainly is not. It has elsewhere been shown how a communication across any part of this Isthmus, even by an ordinary road, can be made to extend, and to accelerate the mail communications between Great Britain and all the western coasts of America, and more especially with the most eastern parts of the eastern world, and her own rising empire in New Holland. Nothing calls forth the enterprize and the energies of mankind, equal to the rapidity and regularity of correspondence : and without this, no country can either improve or advance in cultivation or civilization.

The comparative distances by the several lines of communication will stand as follow:—

	Geo. Miles.
Falmouth, direct to Rialejo	4650
Rialejo to Colombia River	3000
	<hr/> 7650

		Geo. Miles.
London to Icy Cape, over the North Pole	3870	
Icy Cape to Colombia River, by Oonoolaska	2745	
	<hr/>	6615
		<hr/>
London to Icy Cape, over the Pole . . .	3870	
Icy Cape to Canton	4200	
	<hr/>	8070
		<hr/>
Falmouth direct to Gulf Papagayo . . .	4650	
Papagayo to Canton, by Owhyhee . . .	9350	
	<hr/>	14,000
		<hr/>
London to Icy Cape, over the Pole . . .	3870	
Icy Cape to Sydney, New South Wales .	6600	
	<hr/>	10,470
		<hr/>
Falmouth to Rialejo, by Jamaica . . .	5530	
Rialejo direct to Sydney, New South Wales	7400	
	<hr/>	12,930
		<hr/>
Falmouth to Colombia River, by L. Nicaragua	8345	
Ditto ditto Cape Horn	13,100	
	<hr/>	4755 diff.
		<hr/>
Falmouth to Sydney direct, westward .	12,400	
Ditto to ditto, by Cape of Good Hope .	6,205	
Cape to Sydney direct	6,470	
	<hr/>	12,670
		<hr/>
Falmouth to Cape Good Hope	6205	
Cape Good Hope to Trincomalee . . .	4720	
Trincomalee to Batavia	1750	
Batavia to Sydney, by Hobart Town . .	4085	
	<hr/>	16,760
		<hr/>
Falmouth to Rialejo, by Fayal, &c. . .	5530	
Rialejo to Canton, by Owhyhee . . .	9300	
	<hr/>	14,830
		<hr/>
Rialejo to Sydney, New South Wales, by		
Otaheite	7500	
Panama to Sydney	7900	
	<hr/>	15,400
		<hr/>

	Geo. Miles.
Falmouth to Cape of Good Hope . . .	6205
Cape of Good Hope to Trincomalee . . .	4640
Trincomalee to Canton, by Batavia . . .	3580
	<hr/> 14,425
Falmouth to Rialejo	5530
Rialejo to Pekin	8600
	<hr/> 14,130
Falmouth to Cape of Good Hope . . .	6205
Cape of Good Hope to Pekin, by Canton, &c.	9660
	<hr/> 15,865
Falmouth to Port Culebra, by Barbadoes, &c.	5530
Port Culebra to Jeddo, Japan	7250
	<hr/> 12,780
Falmouth to Cape of Good Hope, by Madeira	6205
Cape of Good Hope by Batavia, &c. to Jeddo	8300
	<hr/> 14,505
Falmouth to Rialejo by Barbadoes, &c. .	5530
Rialejo to Manilla	8860
	<hr/> 14,390
Falmouth to Cape of Good Hope, by Madeira	6205
Cape of Good Hope to Manilla, by Batavia	6720
	<hr/> 12,925
Falmouth to Rialejo, by Barbadoes, &c. .	5530
Rialejo to Kamschatka.	6000
	<hr/> 11,530
Falmouth to Cape of Good Hope, by Madeira	6205
Cape of Good Hope to Batavia	5200
Batavia to Kamschatka by Canton . . .	4530
	<hr/> 15,935
London to Icy Cape, over the Pole . . .	3870
Icy Cape to Kamschatka	1280
	<hr/> 5,150

Thus it is evident, that were the passage over the North Pole open and practicable at all seasons, but which it is not, the route by it would be so much shorter for every part from Europe to the ports in Asia and in America, situated on the Northern Pacific, as to be vastly preferable; but when it is recollected that this passage can only be open for a very few months in the course of the year—and also considering the winds and the weather which, during that brief space of time, would certainly be met with in the northern route, and the utter impossibility that there would be of procuring any assistance in that route, should accidents occur,—it is clear, that vessels would almost as speedily, and certainly much more safely, run over the distances by the western route, even to the places more near; while, as regards those which are more distant, there can and need be no comparison drawn.

It will also from these references be observed, that the distances to all the eastern parts of Asia, and the north-west coast of America, are, with a very few exceptions (in these, too, the distances are nearly equal), nearer than the distances would be, either taken by the Cape of Good Hope or Cape Horn, the only routes always open; while, considering the winds and the seas which are met with in either of these routes, it is plain that ships would run over the distance by the western route through central America, even to the most distant parts in eastern Asia that have been adverted to, sooner and much easier than they could do by either of the former. The saving of insurance alone in the route by the mild tropical climates, and also of wear and tear in ships by the same channel, compared to what all these would amount to in the navigation by the other routes, to say nothing of the saving of time in voyages, would be objects of great importance to commercial and nautical men.

APPENDIX.—No. I.

Places.	Lat.		Long.	
Falmouth	50° 8'	N.	5° 1'	W.
Terceira, Azores.....	38° 38' 23"	—	27° 12' 48"	—
Halifax, Nova Scotia.....	44° 39'	—	63° 33'	—
New York	40° 42'	—	74° 2'	—
Bermuda, Town	32° 22'	—	64° 33'	—
Madeira, Funchall.....	32° 47' 42"	—	16° 55' 30"	—
Teneriffe, St. Cruz	28° 28' 00"	—	16° 15'	—
Lisbon.....	38° 24'	—	9° 13'	—
Cadiz	36° 31'	—	6° 18'	—
Gibraltar.....	36° 6' 20'	—	5° 20' 53"	—
Nassau, New Providence	25° 5'	—	77° 18'	—
Turk's Islands	$\frac{21^{\circ} 6'}{20^{\circ} 13'}$		$\frac{71^{\circ} 15'}{69^{\circ} 28'}$	
Crooked Island	22° 44'	—	73° 54'	—
Havannah	23° 9' 26"	—	82° 20'	—
St. Jago, Cuba	19° 57' 39"	—	76° 2' 45"	—
Cape Nichola Mole	19° 49' 20"	—	73° 27' 30"	—
St. John's, Porto Rico	18° 29' 10"	—	65° 39'	—
St. Thomas.....	18° 21' 5"	—	64° 57' 50"	—
Kingston, Jamaica.....	17° 57' 57"	—	76° 46' 10"	—
Vera Cruz	19° 12' 15"	—	96° 7' 12"	—
Tampico	22° 15' 56"	—	97° 52'	—
Honduras, Belize	17° 29' 29"	—	88° 11' 15"	—
Chagre	9° 18' 40"	—	79° 55'	—
Panama	8° 57' 30"	—	79° 29' 20"	—
Carthagená	10° 26'	—	75° 37' 5"	—
Laguayra	10° 37'	—	67° 1' 35"	—
Demerara, George Town	6° 49'	—	58° 11'	—
Barbadoes, Bridgetown	13° 5' 30"	—	59° 43' 15"	—
Antigua, E. H.	17° 3'	—	61° 50'	—
Trinidad, Port of Spain	10° 38' 42"	—	61° 59' 30"	—
Cape St. Roque	5° 28'	S.	35° 17'	—
Maranham	2° 28'	—	44° 16'	—
Pernambuco	8° 41'	—	34° 51'	—

Places.	Lat.	Long.	W.
Bahia	12° 55'	S. 38° 30'	—
Rio de Janeiro	22° 54' 15"	— 43° 15' 50"	—
Monte Video	34° 53' 30"	— 56° 16'	—
Buenos Ayres.....	34° 16'	— 58° 24'	—
Salt Key, middle, Turk's Island	21° 20'	— 71° 4'	—
Crooked Island, Castle Island	22° 7' 30"	— 74° 18' 45"	—
Trinidad de Cuba	21° 43'	— 80°	—
Cape Antonio.....	21° 54'	— 84° 57'	—
Montego Bay, Jamaica	18° 32'	— 78° 2'	—
St. John's, Newfoundland	47° 34'	— 52° 38'	—
St. John's, New Brunswick	45° 15'	— 66° 2' 19"	—
Quebec	46° 47' 30"	— 71° 10'	—
Montreal	45° 46'	— 70° 35'	—

Distances and Bearings of Places.

Places.	Geo. Miles.
Falmouth to Lisbon	S. 14° W. 730
Ditto Gibraltar	S. 4° W. 820
Ditto Teneriffe	S. 22° W. 1410
Ditto Madeira	S. 27° W. 1170
Ditto Terceira.....	S. 54° W. 1180
Ditto New York.....	S. 79½° W. 3000
Madeira to Barbadoes	S. 63° W. 2600
Terceira to Barbadoes	S. 49° W. 2340
Ditto Antigua	S. 54° W. 2200
Ditto St. Thomas	S. 59° W. 2350
Madeira to St. Thomas	S. 72° W. 2800
Ditto Cape Nichola Mole.....	S. 75° W. 3000
Terceira to Cape Nichola Mole.....	S. 65° W. 2700
Falmouth to Barbadoes	S. 50° W. 3500
Ditto St. Thomas	S. 57° W. 3500
Ditto Cape Nichola Mole	S. 61° W. 3800
Ditto Fayal	S. 55° W. 1230
Fayal to Barbadoes	S. 47½° W. 2255
Ditto Cape Nichola Mole.....	S. 64½° W. 2600
Ditto St. John's, Newfoundland.....	N. 63° W. 1180
Ditto Port Praya, Cape Verde.....	S. 11° E. 1545
Cape Verde to Pernambuco	S. 26° W. 1530
Ditto Rio de Janeiro	S. 27° W. 2550

APPENDIX.

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Places.		Geo. Miles.
Fayal to New York.....	N. 86½° W.	2020
Terceira to Rio de Janeiro, by Bahia, &c.....	S. 13° W.	3900
Ditto Halifax	N. 77° W.	1730
Halifax to New York.....	S. 63° W.	520
New York to Nassau, N. P.	S. 10° W.	950
Nassau to Cape Nichola Mole	S. 56° E.	380
Havannah to Vera Cruz.....	S. 73° W.	800
New York to Havannah	S. 22° W.	1140
Jamaica to Chagre, direct	S. 21° W.	550
Chagre to Panama	S. 50° E.	33
Kingston to River St. Juan	S. 46° W.	585
River St. Juan to Rialejo	N. 66° W.	235
Leon to Rialejo	N. 66° W.	21
Madeira to Rio de Janeiro.....	S. 24° W.	3700
Rio de Janeiro to Buenos Ayres	S. 47° W.	1060
St. Thomas, to Cape Nichola Mole	N. 80° W.	470
Ditto to Crooked Island Castle	N. 67° W.	580
Ditto Turk's Island.....	N. 62° W.	380
Turk's Island to Jamaica, direct	S. 58° W.	380
Ditto Havannah	N. 80° W.	630
Ditto Jamaica, by St. Jago de Cuba ...		820
Crooked Island to Cape Nichola	S. 19° W.	146
Ditto Jamaica	S. 29° W.	285
Ditto Havannah	N. 82° W.	445
Barbadoes to 40 miles E. of Alto Vela	N. 68° W.	700
Forty miles E. of Alto Vela to Jamaica, direct ...	N. 85° W.	330
Add by calling at Jacmel		50
Jamaica to Santa Martha	S. 20° E.	425
Santa Martha to Carthagen.....		90
Carthagen to Chagre		290
Montego Bay, Jamaica, to Trinidad de Cuba.....	N. 40½° W.	172
Trinidad de Cuba to Honduras	S. 61° W.	520
Kingston, Jamaica, to Cape Antonio	N. 63° W.	520
Cape Antonio to Havannah	N. 63° E.	164
Falmouth to St. John's, Newfoundland	S. 86½° W.	2040
St. John's, Newfoundland, to Halifax	S. 73° W.	605
Falmouth to Halifax	S. 82½° W.	2550
Fayal to Halifax.....	N. 77° W.	1640
Halifax to St. John's, New Brunswick.....	N. 71° W.	111
St. John's, New Brunswick, to Quebec	N. 66° W.	230
Quebec to Montreal	S. 58° W.	116
New York to Quebec, direct.....	N. 19° E.	390
Ditto Montreal, direct	N. 4° E.	305

Comparative Distances of Places.

	Geo. Miles.	
Falmouth to Terceira	1180	
Terceira to Barbadoes	2340	
	—	3520
Falmouth to Madeira	1170	
Madeira to Barbadoes	2600	
	—	3770
Falmouth to Teneriffe, by Madeira	1410	
Teneriffe to Barbadoes	2570	
	—	3980
Falmouth to Madeira, by Lisbon	1260	
Madeira to Barbadoes	2600	
	—	3860
Falmouth to Fayal	1230	
Fayal to Barbadoes	2255	
	—	3485
Falmouth to Fayal	1230	
Fayal to Cape Nichola Mole	2600	
	—	3830
Falmouth to Terceira	1180	
Terceira to St. Thomas	2350	
	—	3530
Falmouth to Terceira	1180	
Terceira to Cape Nichola Mole	2700	
	—	3880
Falmouth to Madeira	1170	
Madeira to St. Thomas	2800	
	—	3970
Falmouth to Madeira	1170	
Madeira to Cape Nichola Mole	3000	
	—	4170
Madeira to Rio de Janeiro	3700	
Ditto, by Pernambuco and Bahia	109	
	—	3800
Terceira to Rio de Janeiro, by Pernambuco and Bahia.....		3900
Falmouth to Gibraltar, by Lisbon, &c.	1020	
Gibraltar to Alexandria, by Palermo and Malta	1955	
	—	2975
Falmouth to Gibraltar, by Lisbon and Cadiz.....	1050	
Gibraltar to Madeira	600	
Madeira to Barbadoes.....	2600	
	—	4250

CALCULATION OF YEARLY COST OF SAILING PACKETS AND STEAM BOATS.

I.—*Sailing Packets.*

First cost, 9500 <i>l.</i> —Interest, 5 per cent.	£475
Repairs, ordinary tear and wear, at 7½ per cent.	710
Wages, say	1,270
Provisions, say	730
Insurance, 10 per cent.	950
Total	<u>£4,135</u>

Exclusive of yearly depreciation of capital—say, last seventeen years, is 558*l.* 16*s.* yearly.

The per centage here taken for yearly supplies, is below the true outlay. The following sums, in full details, have been received from a very accurate and competent hand, of the outfits of a *new* vessel of 230 tons, cost 4000*l.*, for six successive voyages in the West Indian trade, during a period of 48 months. It is considered unnecessary to insert the details at length. The amount is given for each voyage :—

1st Voyage . .	£296 11 5	4th Voyage . .	£646 3 11
2d ditto . .	219 17 0	5th ditto . .	348 12 8
3d ditto . .	301 1 4	6th ditto . .	266 8 2
	<u>£617 9 9</u>		<u>£1261 4 9</u>
Together .	£1878 14 6	Average .	£313 2 6

Nearly EIGHT per cent. for each voyage, or *twenty-four* per cent. per annum. The amount would also increase yearly with the age of the ship.

II.—*Steam Boats.*

Value 24,000 <i>l.</i> , Interest at 5 per cent.	£1,200
Tear and wear, do. do	1,200
Insurance, do. do.	1,200
	<u>£3,600</u>
Crews, in all 40. Captain per annum	£400
1st Mate	112
2d do.	68
Master	112
1st Engineer	173
2d do.	122
3d do.	88
Engineer Extra	173
3 Engineer Boys, average	39
4 Apprentices, at 10 <i>s.</i> per month	24
4 Stewards and Boys, aver. 25 <i>s.</i> do.	60
21 Seamen, &c. &c. at 40 <i>s.</i> per do.	504
Provisions, at 30 <i>s.</i> each, per do.	720
	<u>2,595</u>
Total	<u>£6,195</u>

By an Admiralty Order, dated August 1837, it is directed that the pay of the following persons in steamers shall be as under, but increased one-half of the sum when on service in the West Indies :—

1st Engineer, per month	£9 12 0
2d do. do.	6 6 0
3d do. do.	4 4 0
Engineer Boys: 1st class, per do.	1 14 0
„ 2d do. do.	1 6 0
„ 3d do. do.	1 3 0
„ 4th do. do.	0 14 6

And according to the Report of the Post-Office Commissioners, the pay of the following officers on some of the Home Steam-boat Stations, is :—

1st Mate, per annum	£78 0 0
2d do. „	45 10 0
Master „	78 0 0
Captains „	from 400 <i>l.</i> to 500 <i>l.</i>

III.—*Small Sailing Vessels.*

Cost, say averages 2,000 <i>l.</i> —Interest at 5 per cent. . .	£100
Insurance, 12 per cent.	240
Tear and wear, at 5 per cent.	100
Crews, 10. Captain, per annum . . .	£100
Mate	70
8 Men and Boys, average 30 <i>s.</i> per month	144
Provisions, at 30 <i>s.</i> per do. . .	180
	<hr/>
	494
Total	<hr/> £934 <hr/>

POSTAGES, PROBABLE AMOUNT, INCREASE, &c.

In the General Post-office Accounts for 1836 (see Finance Accounts, 1837, p. 55), there is charged the sum of 9,406*l.* 7*s.* 5½*d.*, as the sum paid for ship letters. For each letter received by a ship not a regular packet, 2*d.* is paid by the Post Office at landing, and which gives the number of such letters to be 1,128,764 yearly. Suppose 400,000 of these went by packets under the new arrangements, the additional Post-office revenue therefrom would be 16,665*l.*

The sum just mentioned as paid for ship letters may be stated as principally attached to ship letters brought from all places in the Western World. According to a return to the House of Commons (see East India Steam Communication Report, 1837), the number of ship letters from India for 1836, was 159,360. The New York packet ships alone carry from 5000 to 6000 letters each. Twice each month the proposed packets to and from England would bear an equal, perhaps even a greater, number, under the proposed regular and prompt arrangement: certainly all the Canadian correspondence will be very greatly increased. This number, however, in four voyages each month, backwards and forwards, gives at the rate, in round numbers, of 290,000 each year. At 9*d.* each letter, the additional packet postage beyond the ship-letter rate, would be 10,875*l.* gained to the British Post Office.

In the Accounts above referred to, p. 54, there is entered 75,484*l.* 10*s.* 8½*d.*, charged on the postmasters in the British West

Indies, and in British America. This sum is doubtless for the unpaid letters outwards, and perhaps some internal postage. The return postage from these quarters will exceed this sum, because more double and treble letters come inwards than are sent outwards. There is also a considerable sum paid in this country for letters sent by post to the British Colonies.

In the same accounts there is entered, p. 54, 83,610*l.* 10*s.* 5*d.* received by the window men, &c. at the Foreign Post Office. A portion of this must be for the letters outwards to the Brazils, to St. Thomas, to the French Islands, to Honduras, to Mexico, to Havannah, and all places in central South America, for all of which places the postage must be paid before the letter can be forwarded. How much of the above sum is for the purpose alluded to, is not stated, but let it be taken at 30,000*l.* yearly outwards, and an equal sum from the same places inwards ; together, 60,000*l.*

Next, there would be the gain on the *NEW LINE* between Halifax, New York, and the West Indies ; or, more correctly speaking, between *all* North America and *all* the West Indies, from Demerara to Mexico inclusive, and including also the shores of South America on the east, and all its western coasts, from Valparaiso on the south, to Nootka Sound on the north. The exports and imports to and from these quarters, with all quarters of the world, amount, in goods, produce, specie and bills, and freights, &c. to upwards of 80,000,000*l.* a year. The letters to which this vast trade, especially as the whole of it is carried on by means of correspondence, must give rise, will be immense : and yet, with the exception of the scanty mail communication afforded by Britain to a few places, there is none to be found. The amount of the trade here stated, includes of course the trade with all places in Europe. The portion which is exclusively Colonial and American, and which would of course be attached to the new line alluded to, cannot be less in exports and imports than 30,000,000*l.* yearly. The proportionate postage from this commerce, even at the ratio of the present West Indian postage, to and from Great Britain and her West Indian colonies, would be 110,000*l.* yearly ; but admitting that a sum equal to *one-half* only of *this sum* came from the letters sent through the British Post Office, the sum gained on this station yearly would be 55,000*l.*

To all these sums must be added a considerable sum in postages, which would be annually drawn from the correspondence between all

parts of the United States, and Maranhão, Pernambuco, Bahia, Rio de Janeiro, Montevideo, Buenos Ayres, &c. which would go by the British packets from all these places to Fayal, and thence on, without any delay, to New York. What this will be, it is impossible to estimate; but taking the trade of the United States with these places as a basis, it can hardly be less than 10,000*l.*, or more probably 12,000*l.* per annum.

The postages derived at present from the packet intercourse with the whole Western World is taken at 200,000*l.* outwards and inwards. It is not too much to estimate, that under the new and extended communications and arrangements, more regular and frequent, this sum would be increased *one-third*, or 66,666*l.*; together, 266,666*l.* yearly. To this there is to be added the additions, as are previously noted; together 92,540*l.*; making the sum total at least 359,206*l.* per annum. The estimated expenditure for conveying the whole of the mails by steam, which are calculated to produce this yearly revenue, is 252,850*l.*, or a gain of 106,356*l.* The present revenue barely pays the expenditure, if so much, of the establishment, consisting of thirty sailing packets; four steamers in the West Indies; ten mail boats (6000*l.* yearly) there; some sailing vessels at Halifax, and very frequently, a considerable assistance from ships of war besides!

Postages and Salaries in West Indies, &c.—1834-5.

	Postages received.			Salaries and Allowances.		
Jamaica	£17,203	18	5	.....	£562	10 0
Bahama	146	0	2	.....	* 22	19 6
Barbadoes	4798	13	7	.....	100	0 0
Berbice and Demerara ...	1593	10	8	.....	150	0 0
Bermuda .....				.....	50	0 0
Dominica.....	255	8	1	.....	100	0 0
Grenada	605	14	4	.....	80	0 0
St. Vincents.....	632	19	3	.....	80	0 0
Tobago.....	395	14	5	.....	* 75	11 3
Trinidad	931	10	1	.....	150	0 0
St. Lucia	320	12	2	.....	50	0 0
Antigua	781	2	1	.....	80	0 0
Montserrat	80	3	6	.....	* 15	3 11

* And 20 per cent. on neat proceeds.

	Postages received.	Salaries and Allowances.
St. Christophers	£ 547 0 3	£120 0 0
Nevis	146 16 8	60 0 0
Tortola.....	109 8 10	50 0 0
British North America ...	42,094 17 10	958 10 4

Parl. Pap. 598 of 1836, and 6th Report of Post-office Commissioners, 1836, p. 32, &c.

It has been stated (see p. 3) that many letters by packets from foreign parts are returned unopened to the Post-Office, in order to save the postages, because the originals or duplicates had previously been received through private channels. It would be useful and important to ascertain the number of these. In the Finance Accounts for 1837, p. 54, there is entered in the Post-office deductions on account of "RETURNED, refused, mis-sent, and redirected letters, overcharges, and returns," the following sums :—

England	£59,288 4 1
Scotland.....	11,129 19 10
West Indies and British N. America..	15,337 15 9
Window men, Foreign Office	734 15 10½
	<u>£86,490 15 6½</u>

Postages.—Mediterranean, &c.

Letters for India, year ending October 1836.....	£990 7 4
Ditto Alexandria, ditto, ditto.....	1285 1 1
	<u>£2,275 8 5</u>

Postages of letters passing through Falmouth by the Mediterranean packet, years ending October *—

	1834.	1835.	1836.
To Cadiz	£820 11 5	£811 19 6½	£703 8 3
Gibraltar.....	1,114 17 11	1,603 18 0	1,527 14 8½
Malta	549 19 2	670 4 11½	694 2 6½
Corfu	300 9 8	421 19 10	486 8 10
	<u>£2,785 18 2</u>	<u>£3,507 17 4</u>	<u>£3,411 14 4</u>

* Appendix, 196, Report Steam Communication with India.

ARRIVALS AND DEPARTURES OF PACKETS CALCULATED.

The arrivals at, departures from, and the returns to Fayal, of the packets for all quarters, will correspond so well with the arrival outwards of the steamers from Falmouth, that no material delay on the part of the steamers bearing all the return mails to Falmouth will be occasioned or required. But because February has only twenty-eight days, the mails, to make all coincide more nearly, should be made up in London, instead of the 1st and 15th of February, on the 30th of January, and 13th of the former month. The following, however, taking the despatch of the mails from London according to the days in each month, will show the periods of the whole:—

1.—*West Indies.*

Mail of	Arrival at Fayal	Return to do.
January ... 1	January ... 10	February ... 25
... .. 15	... .. 25	March 13
February ... 1	February ... 10	... .. 28
... .. 15	... .. 25	April..... 12
March 1	March 10	... .. 25
... .. 15	... .. 25	May 10
April..... 1	April..... 10	... .. 26
... .. 15	... .. 25	June..... 10
May..... 1	May 10	... .. 25
... .. 15	... .. 25	July 10
June..... 1	June..... 10	... .. 26
... .. 15	... .. 25	August..... 10
July 1	July 10	... .. 25
... .. 15	... .. 25	September.. 9
August..... 1	August..... 10	... .. 25
... .. 15	... .. 25	October ... 10
September.. 1	September.. 10	... .. 26
... .. 15	... .. 25	November.. 10
October ... 1	October ... 10	... .. 25
... .. 15	... .. 25	December... 10
November... 1	November... 10	... .. 26
... .. 15	... .. 25	January ... 10
December... 1	December... 10	... .. 25
... .. 15	... .. 25	February ... 9

Thus showing that, by the time the steamer was ready to return to Falmouth, the West Indian mails would be up at Fayal; and, as regards the other quarters, the mails from thence would have some time to spare for the voyages in case of accidents, and still be in time at Fayal, thus :—

2.—*Brazils.*

Mail of	Arrival at Fayal.	Return to do.
March 1	March 10	April 24
... .. 15	... .. 25	May 9
April 1	April 10	... .. 25
... .. 15	... .. 25	June..... 8
May 1	May 10	... .. 24
... .. 15	... .. 25	July 8
June..... 1	June..... 10	... .. 25
... .. 15	... .. 25	August..... 8
July 1	July 10	... .. 24
... .. 15	... .. 25	September.. 9
August..... 1	August..... 10	... .. 24
... .. 15	... .. 25	October ... 9
September... 1	September.. 10	... .. 25
... .. 15	... .. 25	November... 8
October ... 1	October ... 10	... .. 24
... .. 15	... .. 25	December... 9
November... 1	November... 10	... .. 25
... .. 15	... .. 25	January 9
December... 1	December... 10	... .. 24
... .. 15	... .. 25	February ... 8
January ... 1	January ... 10	... .. 24
... .. 15	... .. 25	March 9
February ... 1	February ... 10	... .. 25
... .. 15	... .. 25	April..... 9

3.—*Fayal and Halifax Department.*

Mail of	Arrival at Fayal.	Return to do.
March 1	March 10	April 7
... .. 15	... .. 25	... .. 22
April 1	April 10	May 8
... .. 15	... .. 25	... .. 23
May 1	May 10	June..... 7
... .. 15	... .. 25	... .. 22
June..... 1	June..... 10	July 8
... .. 15	... .. 25	... .. 23

Mail of		Arrival at Fayal		Return to do.	
July	1	July	10	August	7
... ..	15	... ..	25	... ..	23
August	1	August	10	September ..	7
... ..	15	... ..	25	... ..	22
September ...	1	September ..	10	October ...	8
... ..	15	... ..	25	... ..	23
October ...	1	October ...	10	November ..	7
... ..	15	... ..	25	... ..	22
November ...	1	November ...	10	December ...	8
... ..	15	... ..	25	... ..	23
December ...	1	December ...	10	January ...	7
... ..	15	... ..	25	... ..	23
January ...	1	January ...	10	February ...	7
... ..	15	... ..	25	... ..	22
February ...	1	February ...	10	March ...	10
... ..	15	... ..	25	... ..	25

4.—*North American and West Indian Department.*

Mail of		At Barbadoes		At Cape Nichola		Return to do.	
March	1	March	22	March	27	April	24
... ..	15	April	6	April	11	May	9
April	1	... ..	22	... ..	27	... ..	25
... ..	15	May	7	May	12	June	9
May'	1	... ..	22	... ..	27	... ..	24
... ..	15	June	6	June	11	July	9
June	1	... ..	22	... ..	27	... ..	25
... ..	15	July	7	July	12	August	9
July	1	... ..	22	... ..	27	... ..	24
... ..	15	August	6	August	11	September ...	9
August	1	... ..	22	... ..	27	... ..	24
... ..	15	September ...	7	September ...	12	October	10
September ...	1	... ..	22	... ..	27	... ..	25
... ..	15	October	7	October	12	November ...	9
October	1	... ..	22	... ..	27	... ..	24
... ..	15	November ...	6	November ...	11	December ...	9
November ...	1	... ..	22	... ..	27	... ..	25
... ..	15	December ...	7	December ...	12	January	9
December ...	1	... ..	22	... ..	27	... ..	24
... ..	15	January	6	January	11	February ...	8
January	1	... ..	22	... ..	27	... ..	24
... ..	15	February ...	6	February ...	11	March	11
February ...	1	... ..	22	... ..	27	... ..	27
... ..	15	March	9	March	14	April	11

The following will be the periods of the steamers between Halifax and Havannah, from which it will appear how well the whole will work as regards all North America and all the West Indies; and also how regularly and pointedly the return steamer from the Havannah (bringing the Havannah and Tampico mails, should any accident have happened to the Jamaica steamer), will call at New York for the replies to the letters by the packet from Europe, arrived at that city two days before her; and carry these forward to Halifax (giving two days to stop at New York) in time to get the steamer with the homeward British mails from that place to Fayal.

Arrivals and Departures of the London Mails of the following dates.

Mail of		Arrive at Havannah		Leave Halifax		Arrive at Havannah		Return to Halifax	
January...	1	January..	31	January..	20	January... 30		February 13	
...	15	February	15	February	4	February 14	...	28	
February..	1	March ...	3	...	20	March ... 2	March ...	16	
...	15	...	18	March ...	7	...	17	April..... 1	
March ...	1	...	31	...	20	...	30	...	13
...	15	April.....	15	April.....	4	April.....	14	...	28
April.....	1	May	1	...	20	...	30	May	13
...	15	...	16	May	5	May	15	...	29
May	1	...	31	...	20	...	30	June.....	13
...	15	June.....	15	June.....	4	June.....	14	...	28
June	1	July	1	...	20	...	30	July	14
...	15	...	16	July	5	July	15	...	29
July	1	...	31	...	20	...	30	August...	13
...	15	August...	15	August...	4	August... 14	...	28	
August ...	1	...	31	...	20	...	30	September	13
...	15	September	15	September	4	September 14	...	28	
September	1	October ...	1	...	20	...	30	October...	14
...	15	...	16	October...	5	October... 15	...	29	
October...	1	...	31	...	20	...	30	November	13
...	15	November	15	November	4	November 14	...	28	
November	1	December	1	...	20	...	30	December	14
...	15	...	16	December	5	December 15	...	29	
December	1	...	31	...	20	...	30	January...	13
...	15	January...	15	January...	4	January... 14	...	28	

Sailing packets in these stations would depart and arrive at corresponding periods, being able to be, if any thing, earlier forward to Fayal; but always 15 days more on their respective voyages than the steam-boats.

The steamer outwards from Barbadoes could land, and the

homeward bound packet take up the Haytian mails at Cape Henry, when the return packet goes by the north side; and the *return* Haytian mails could be picked up at Jacmel, if the packet, *when a steamer*, calls, as she may do, at that place on her voyage to Jamaica, preparatory to her return by way of St. Jago and Cape Nichola to Fayal or Falmouth.

The distance and time of communicating between Barbadoes and Halifax with steamers, by Jamaica and Havannah, would be,—

	Geo. Miles.	Days.
Halifax to Havannah	1110	6½
Havannah to Barbadoes by Jamaica, &c. .	1965	13
Stoppages		2
Barbadoes to Halifax by Jamaica, &c. . .	3075	15½
Stoppages, suppose		3
Total	6150	40

Speed, &c. of Steam Boats.

In the Sixth Report of the Post-office Commissioners, p. 281, it is stated that the Malta steamers average $7\frac{1}{2}$ miles per hour, and have done so for a period of two years. The Dublin and Liverpool Steam Post-office packets average also $7\frac{1}{2}$ miles per hour, or 180 miles daily.

In the same Report, p. 265, Mr. Napier states, that he built the steamers which run between Dundee and London; and that during a period of eighteen months they have averaged $11\frac{1}{2}$ miles per hour. This, it is believed, means British miles, or 10 geographical miles. At the latter rate they run 240 miles per day. During the period above mentioned, these boats have not cost their owners 18*l.* for repairs to the machinery. A steam-boat of 240-horse power would at that time (1836) cost 24,000*l.* to 25,000*l.*, burden 620 tons. A contractor, to keep them in repair, would require 1,000*l.* per annum.

According to accounts lately received from the East, the *Berenice*, with only one engine, the other having been broken, ran from Socotora to Suez, a distance of 1800 miles, in $9\frac{1}{2}$ days. The Leith and London Steamers, such as the *Monarch*, of 200-horse power, run the distance, 415 geographical miles, in 45 hours,—the average of voyages during the year; and frequently the distance is run in 40 hours, and even less.

Estimates for Passengers on each Station.

Demerara steamers, 48 voyages, 20 each, 960 per annum, at 30 dollars	28,800
1st Leeward station—Barbadoes to Havannah, through all the islands, 48 voyages monthly, 50 each, is 2400, at 70 dollars average	168,000
2d Leeward station—Havannah to Vera Cruz, and Jamaica to Chagre, Panama, &c. &c., 96 voyages, at 20 each, is 1920 yearly, at 40 dollars	76,800
Packets and sailing-vessels in all the points, 120 voyages, average 10 each, is 1200, at 25 dollars	30,000
Total dollars	303,600
At 4s. 2d. per dollar, is sterling	£63,250
Falmouth to Barbadoes, 48 voyages, 20 each, at 40l.	£38,000
Falmouth to Rio de Janeiro, 48 voyages, 10 each, at 55l.	26,200
Falmouth to Halifax, 48 voyages, 20 each, 960 yearly, average 35l.	33,600
Halifax to West Indies, by New York, 48 voyages, 20 each, is 960, at 26l.	24,960
Falmouth to Madeira and Teneriffe, 200 yearly, at 20l.	4,000
Rio de Janeiro to Buenos Ayres, 240 yearly, at 15l.	3,600
Pernambuco to Maranham, 120 yearly, at 12l.	1,440
West India Islands to Bermuda, Nassau, &c. &c. 280 yearly, at 12l.	3,360
	135,160
Total	£198,410
Deduct expense, finding one-third	66,136
Amount gained	£132,274

The cost of finding passengers is here estimated at 4 dollars per day. In the House of Commons Report about Steam Communications with India, the cost of finding passengers to that quarter of the world is estimated by experienced captains of ships at 10s. sterling per day. The charge made in steamers in the West Indies for cabin passage money, by orders of the Admiralty, is 17l. sterling, Barbadoes to Jamaica; 10l. sterling, Jamaica to St. Thomas; and 10l. sterling, St. Thomas to Barbadoes.

Income :—Parcels, Packages, and Fine Goods. Steamers to be restricted to 40 tons Weight in all.

240 voyages on the four great lines yearly, 20 tons each, at the rate of 10 <i>l.</i> per ton over all	£48,000
Second Class Lines, Barbadoes to Havannah, Havannah to Vera Cruz; Jamaica to Chagre, &c.; Barbadoes to Demerara, 192 voyages yearly, 20 tons each, average 10 <i>l.</i>	38,400
Suppose Third Class Lines by Sailing-vessels every where—388 voyages, average 8 tons	31,040
Total	£117,440

But Port Dues remain to be deducted—uncertain, say, 15,000*l.*

APPENDIX, No. II.—EASTERN WORLD.

Places.	Latitudes.		Longitudes.	
Falmouth	50° 8'	N.	5° 1'	W.
Lisbon.....	38° 24'	—	9° 12'	—
Cadiz	36° 31'	—	6° 18'	—
Gibraltar.....	36° 6' 20"	—	5° 20' 53"	—
Malta	35° 53'	—	14° 30'	E.
Zante	37° 47'	—	20° 54'	—
Athens	37° 57'	—	23° 43'	—
Smyrna	38° 25'	—	27° 6' 45"	—
Constantinople	41° 12'	—	28° 59'	—
Alexandria (light) Egypt.....	31° 12'	—	29° 52'	—
Cairo	30° 3'	—	31° 18'	—
Suez	30° 0'	—	32° 28'	—
Mocha.....	13° 20'	—	43° 20'	—
Babelmandel, Isle	12° 38'	—	43° 20'	—
Cape Guardafui	11° 41' 4"	—	51° 12' 24"	—
Socotora, Galanscea road	12° 43'	—	53° 18'	—
Cape Aden.....	12° 46'	—	45° 10' 30"	—
Bombay	18° 55'	—	72° 54'	—
Colombo, Ceylon	6° 57'	—	79° 57'	—

Places.	Latitudes.	Longitudes.	
Point de Galle, Ceylon	6° 1'	N. 80° 18'	E.
Trincomalee, ditto	8° 33' 30"	— 81° 20' 15"	—
Madras	13° 4' 10"	— 80° 21'	—
Calcutta	22° 34'	— 88° 26'	—
Cape Comorin	8° 4'	— 77° 41' 30"	—
Mauritius, Port Louis	20° 9'	S. 57° 28'	—
Bourbon, St. Dennis	20° 52'	— 55° 26'	—
Madagascar, Cape St. Mary	25° 38' 54"	— 45° 1' 42"	—
Ditto Tamatave, E. C.	18° 10' 6"	— 19° 23' 18"	—
Amsterdam Isle	37° 52' 0"	— 77° 52'	—
St. Paul's, ditto	34° 42'	— 77° 52'	—
Great Nicobar Isle.....	6° 45'	— 94° 0'	—
Singapore	1° 12'	N. 103° 30'	—
Batavia	6° 0'	S. 106° 51' 45"	—
Canton	23° 7' 10"	N. 113° 14'	—
Swan River.....	32° 4' 31"	S. 115° 6' 43"	—
Hobart Town	42° 53' 35"	— 147° 28'	—
Sydney	33° 50' 40"	— 151° 14'	—
Madeira, Funchall.....	32° 47' 42"	N. 16° 55' 30"	W.
Cape de Verde, Port Praya	14° 53' 40"	— 23° 34'	—
Ascension Isle	7° 55' 56"	S. 14° 23' 50"	—
St. Helena Isle	15° 54' 48"	— 5° 45' 20"	—
Cape of Good Hope	34° 22'	— 18° 24' 24"	E.
Rio de Janeiro	22° 54' 15"	— 43° 15' 50"	W.
Pernambuco	8° 4'	— 34° 51'	—

Distances and Bearings of Places.

		Geo. Miles.
Falmouth to Gibraltar	S. 4° W.	820
Ditto to Madeira	S. 27° W.	1170
Madeira to Cape Verde	S. 19° W.	1130
Gibraltar to Malta, direct.....	S. 1° E.	770
Malta to Zante	N. 69° E.	320
Zante to Athens, round Cape		260
Athens to Constantinople.....	N. 51° E.	310
Malta to Alexandria	S. 70° E.	825
Suez to Babelmandel		1205
Babelmandel to Bombay		1630
Cape Verde to Ascension	S. 22° W.	1530
Ascension to St. Helena	S. 47° E.	655
St. Helena to Cape of Good Hope	S. 50° E.	1720
Rio de Janeiro to ditto ditto.....	S. 78° E.	3250
Cape of Good Hope to Mauritius	N. 38° E.	2280
Mauritius to Swan River.....	S. 77° E.	3150

		Geo. Miles.
Mauritius to Colombo, Ceylon.....	N. 38° E.	2100
Ditto to Point de Galle.....	N. 49° E.	2080
Point de Galle to Bombay	N. 29° W.	880
Madras to Calcutta	N. 39° E.	735
Trincomalee to Car Nicobar	S. 82° E.	775
Nicobar to Singapore	S. 60° E.	665
Singapore to Batavia	S. 25° E.	475
Singapore to Canton.....	N. 24° E.	1440
Batavia to Canton	N. 18° E.	1830
Trincomalee to Batavia	S. 60° E.	1750
Batavia to Swan River.....	S. 18° E.	1745
Swan River to Hobart Town	S. 66½° E.	1770
Hobart Town to Sydney	N. 18° E.	570
Cape of Good Hope to Hobart Town	S. 85° E.	6000
Pernambuco to Cape of Good Hope	S. 62° E.	3300
Fayal to Pernambuco	S. 7° W.	2800
Sydney to Canton.....	N. 33° W.	4100
Canton to Swan River, by E. Coast Borneo..		3300
Fayal to Cape Verde, Port Praya.....	S. 11° E.	1545

1645
100
1680
150

There never having been heretofore any regular packet conveyance to and from India, there are consequently no accurate returns of the postage received, or letters that are conveyed backwards and forwards between England and the vast countries to the eastward of the Cape of Good Hope. The number, however, from the extent of the trade, must be very great; and not a doubt can remain, that if regular and speedy conveyances were established, the numbers would be very much increased. In a communication from Col. Maberly, Secretary to the General Post Office, printed by order of the House of Commons last year, along with the Evidence taken before the Committee appointed to consider the propriety of establishing a Steam Communication with India, that gentleman gives the whole amount of postage outwards for 1836 to Cadiz, Gibraltar, Malta, and Corfu, at 3411*l.*, and reckons the amount inwards at the same sum. He estimates the whole postage outwards and inwards, including sea postage between England, Ceylon, India, and the Mediterranean, at 47,000*l.* Even this sum, which certainly by no means includes every letter to and from the places mentioned, would, under the arrangements proposed, be doubled, independently of all the postages which would be obtained from the New South Wales, China, and Batavia, &c. &c. trade. The coasting or internal postages of Hindostan would certainly be greatly increased.

In the Finance Accounts of 1837, p. 55, there is charged the sum of 14,216*l.* 19*s.* 11*d.* for transit postage through foreign countries. Much of this is doubtless from letters which come through France, &c. from the Mediterranean, and countries near that sea. Under the proposed regular and frequent packet arrangement, the letters from which much of this sum is obtained would come directly through the British Post Office.

The amount of postage to be obtained through the vast range of countries which the New Plan proposes to embrace, can only be conjectured by considering the immense trade which is carried on with them and by them. As it is very great, so must the correspondence to which it gives rise be.

Mauritius and Socotora.

An error has been committed in stating the expense on this station (see page 68.) Three sailing-vessels, instead of two, will be required ; thus adding 4000*l.* to the capital, and 2000*l.* to the yearly expenditure.

Including the Mediterranean, the yearly cost of the present Foreign Packet conveyances, limited, uncertain, and irregular as the whole is, cannot be less than 350,000*l.*, exclusive of any sum set apart to replace the capital engaged in it.

If the East Indian communication is amalgamated with the plan for the Western World to Pernambuco by Fayal, as it may readily be, then a considerable further reduction of expenditure in the former can be made (including the sailing-vessels between Rio de Janeiro and Buenos Ayres) in capital 106,000*l.* and in direct yearly charges 45,000*l.* ; and nevertheless extend the steam conveyance to Buenos Ayres by Rio de Janeiro from Pernambuco. This desirable object could be effected with the saving mentioned, and without creating any additional delay in the communication ; because, if the communication by this route between Falmouth and the Cape of Good Hope can be effected, as it may be, within 75 days, then no delay in the course of the mails takes place, while a considerable expense is saved, and important additional accommodation is afforded to the public, and to the commercial world. The distance from Falmouth to the Cape of Good Hope by Fayal and Pernambuco, is 7330

geographical miles. This could be run in 75 days : thus—36 days outwards, and 34 days inwards : 215 geographical miles per day in the latter, and 203 geographical miles in the former.

APPENDIX, No. III.—PACIFIC OCEAN.

Longitudes and Latitudes, Places, &c.

Places.	Lat.	Long.	
River St. Juan, mouth of	10° 53'	N. 83° 40'	W.
Kingston, Jamaica	17° 57' 57"	— 76° 46' 10"	—
Port Culebra	10° 42'	— 85° 37'	—
Leon	12° 20'	— 86° 45'	—
Rialejo	12° 29' 50"	— 87° 6'	—
Colombia River	46° 19'	— 123° 50'	—
Port Illuluk Oonolashka	53° 52'	— 166° 32'	—
Nootka Sound.....	49° 34'	— 126° 28' 30"	—
Icy Cape.....	70° 17'	— 161° 40'	—
Christmas Isle, Pacific	1° 58'	— 157° 32'	—
Owhyhee.....	19° 43' 51"	— 155° 7' 10"	—
Otaheite	17° 29' 12"	S. 149° 28' 46"	—
Melville Island, Port Dundas	12° 13'	— 136° 46'	E.
Sydney, New South Wales.....	33° 50' 40"	— 151° 14' 10"	—
Canton, China.....	23° 7' 10"	N. 113° 14'	—
Pekin	39° 54'	— 116° 26'	—
Jeddo, Japan	35° 40'	— 139° 50'	—
Kamschatka	56° 15'	— 162°	—
Manilla	14° 36'	— 121° 2'	—
Chagre	9° 21'	— 80° 4' 5"	—
Panama	8° 57' 30"	— 79° 29' 20"	—
Point Mala	7° 25'	— 79° 54'	—
Port Damas, Quibo	7° 26'	— 81° 31'	—
Acapulco.....	16° 50' 29"	— 99° 53' 47"	—
St. Blas	21° 32' 24"	— 105° 18' 27"	—
Cape St. Lucas, California	22° 52' 28"	— 109° 50' 23"	—
Guayaquil	2° 12' 12"	S. 79° 39' 46"	—
Lima	12° 2' 34"	— 77° 8' 30"	—
Callao	12° 3' 45"	— 77° 14' 10"	—
Arica	18° 28' 35"	— 70° 16'	—
Coquimbo	29° 53' 43"	— 71° 18' 40"	—
Valparaiso	33° 1' 55"	— 71° 40' 25"	—
Fort St. Carlos, Chiloe.....	41° 51' 50"	— 73° 53' 50"	—

Bearings and Distances of Places.

Places.		Miles.
Falmouth to Sydney, direct westward	S. 66° W.	12,400
London to Icy Cape 3,775, add circle 100	N. & S.	3,875
Icy Cape to Canton	S. 48° W.	4,200
Ditto to Sydney, New South Wales	S. 19° W.	6,600
Ditto to Port Illuluk, Oonoolashka.....	S. 8° W.	995
Port Illuluk to Colombia River	S. 75° E.	1,750
Christmas Isle to Sydney, New South Wales	S. 54° W.	3,650
Ditto to Canton	N. 76° W.	5,250
Owhyhee to Otaheite	S. 8½° E.	2,250
Falmouth to Panama direct	S. 56° W.	4,450
Ditto ... ditto by Barbadoes and Jamaica.		5,285
Port Culebra to Manilla	N. 89½° W.	9,022
Cape of Good Hope to Batavia.....	N. 71° E.	5,200
Batavia to Canton	N. 18° E.	1,830
Canton to Pekin.....		1,440
Batavia to Manilla.....	N. 35° E.	1,510
Canton to Kamschatka	N. 47° E.	2,900
Ditto to Jeddo	N. 62° E.	1,610
Kingston, Jamaica, to Port Culebra.....	S. 50° W.	680
Ditto to River St. Juan	S. 44° W.	585
River St. Juan to Rialejo	N. 66° W.	235
Falmouth to Port Culebra, direct	S. 60° W.	4,650
Ditto ... to ditto ... by Barbadoes, Jamaica, &c.		5,345
Jamaica to Chagre.....	S. 21° W.	550
Chagre to Panama.....	S. 52° E.	33
Panama to Point Mala	S. 15° W.	95
Point Mala to Port Damas, Quibo	S. 89° W.	97
Port Damas to Rialejo	N. 48° W.	450
Rialejo to Acapulco	N. 62° W.	1,180
Acapulco to St. Blas	N. 48° W.	420
St. Blas to Cape St. Lucas.....	N. 73° W.	274
Panama to Guayaquil	S. 30' W.	670
Guayaquil to Lima	S. 15° E.	610
Lima to Arica	S. 45° E.	570
Arica to Coquimbo.....	S. 5° W.	690
Coquimbo to Valparaiso	S. 5° W.	190
Valparaiso to Fort Carlos, Chiloe	S. 16° W.	555
Rialejo, direct, to Sydney, New South Wales	S. 68° W.	7,400
Panama to Sydney.....	S. 71° W.	7,850
Ditto to Canton.....	N. 85° W.	9,700
Ditto to Owhyhee.....	N. 82° W.	4,650
Ditto to Otaheite	S. 69° W.	4,450

Places.		Miles.
Rialejo to Canton	N. 86° W.	9,170
Ditto to Owhyhee	N. 84° W.	4,100
Ditto to Otaheite	S. 64½° W.	4,150
Ditto to Christmas Isle	S. 81° W.	4,000
Christmas Isle to Otaheite	S. 22° E.	1,190
Owhyhee to Canton	N. 88° W.	5,200
Ditto to Sydney	S. 46° W.	4,500
Otaheite to Sydney	S. 79° W.	3,400
Rialejo to Manilla	N. 89° W.	8,860
Ditto to St. Peter and St. Paul, Kamschatka ...	N. 66° W.	6,000
Ditto to Pekin	N. 79° W.	8,600
Ditto to Jeddo, Japan	N. 79° W.	7,300
Colombia River to Canton.....	S. 77° W.	6,200
Iey Cape to Kamschatka	S. 49° W.	1,280
Rialejo to Port Illuluk, Oonoolashka	S. 57° W.	4,550
Rialejo to Colombia River.....	S. 47° W.	3,000
Jeddo to Canton.....	S. 62° W.	1,610
Manilla to Canton	N. 41° W.	680
Batavia to Jeddo.....	N. 53° E.	3,100
Cape of Good Hope to Hobart Town	S. 85° E.	6,000

The course of mails from Falmouth to Canton, by Isthmus of America, by Rialejo, will be 173 days; and to Sydney, by the same route, 158 days.

Isthmus of America.

The appearance of the Isthmus of America, from Darien to the borders of Mexico, indicates, in a very forcible manner, that this portion of the earth is a fragment of a larger portion, which had, at some important epoch, been to a great extent submerged around it, and that the present Isthmus is the remains of a wider continental tract. In several places within the limits mentioned, the ridges are broken, and the country abounds—in fact, is studded—with high peaks, isolated, yet greatly elevated. To the southward of Lake Nicaragua, between 9° and 10° North latitude, about Cortago or Carthage, the land, or rather ridge, is so elevated, that although within thirty miles of the Pacific on the one hand, and forty miles of the Atlantic on the other hand, yet during the winter months, from November to March, frost and ice abound. The climate everywhere, in the interior parts, is represented as being very healthy, and the country fruitful and pleasant.

